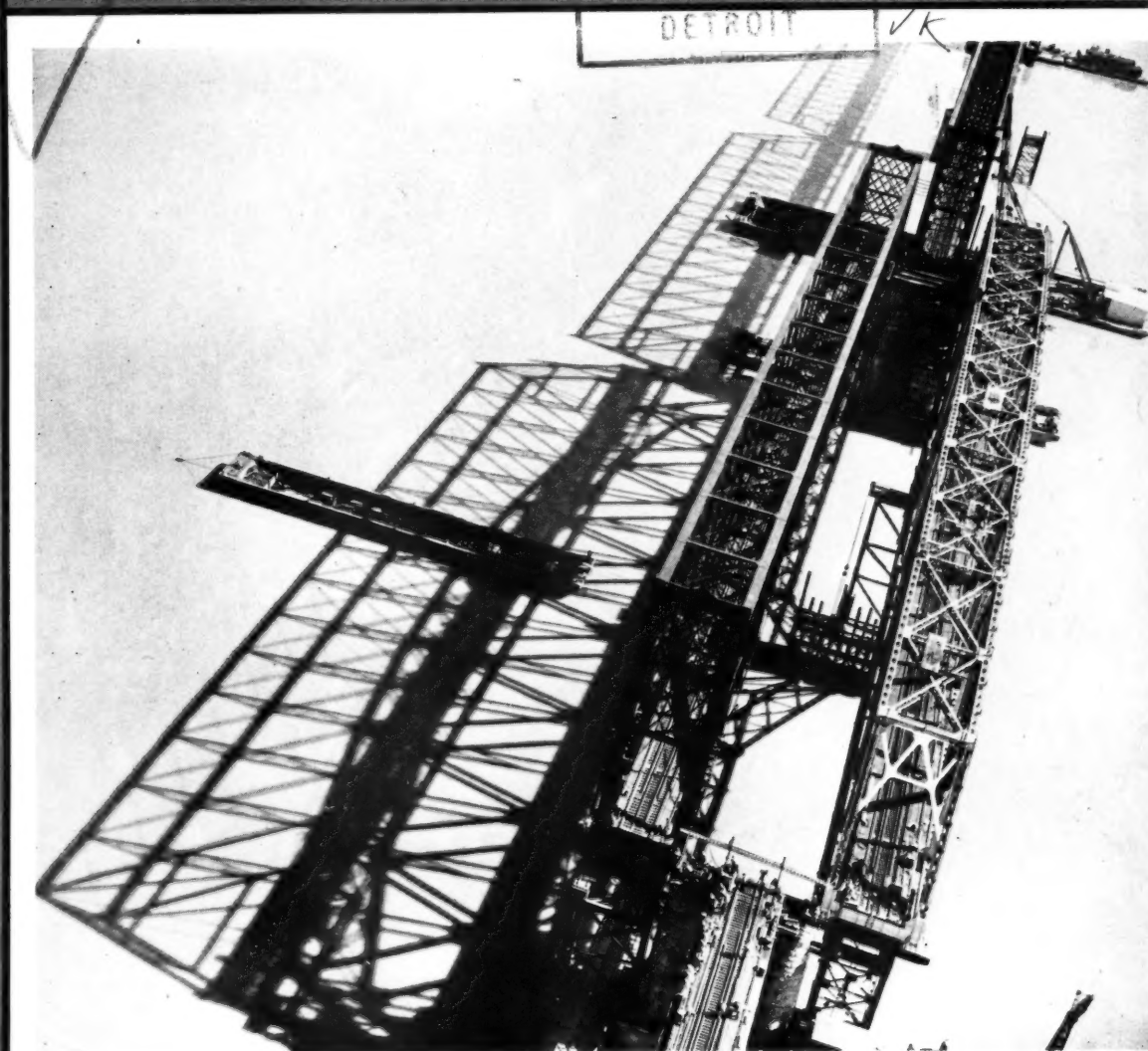


Midwest Engineer

SERVING THE ENGINEERING PROFESSION



PARK FOREST — "THE S. S. WILFRED SYKES"

WSE MEETINGS—PAGE TWO

Vol. 3

NOVEMBER, 1950 IN TWO PARTS—PART ONE

No. 3



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November, 1950

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COVER CREDIT

This month's cover depicts the race to rebuild the Illinois Central bridge over the Ohio River near Cairo, Illinois, without impairing traffic. Workmen are preparing to roll into place the 158-foot span, first of nine to be erected. The old span has been rolled over to rest on temporary falsework. The story of this unusual bridge construction appears on page 12.



November 20, Fall Frolic

HARVEST FESTIVAL AND DINNER

WSE's big social evening this fall is a fun fest and turkey dinner. There will be square dancing, cards, bridge, canasta or your special favorite. Community Singing and Truth or Consequences are on the party agenda too. Telephone for your reservations now, Randolph 6-1736. Donation \$2.75. See details in this issue.

November 27, Wood Authority Scheduled

SPONSORED BY THE FIRE PROTECTION & SAFETY ENGINEERING SECTION

One of the country's outstanding authorities on wood and wood products, **Mr. L. J. Markwardt**, will speak on the subject "Highlights of Progress in Forest Products Research."

Mr. Markwardt is the assistant director, U. S. Forest Products Lab., Madison, Wisconsin and the president of the American Society for Testing Materials.

His talk will present an overall picture of wood and its uses, its new and improved processes such as sandwich construction, and practices to make forest products go further and serve the nation better.

November 30, Luncheon-Meeting

This Thursday, at the weekly luncheon meeting, **Mr. Elmer R. Knight**, engineer of express highways, State of Illinois will speak on "Expressways in Illinois." More details in this issue.

December 4, Hydro Power

SPONSORED BY TRAFFIC ENGINEERING & CITY PLANNING & HYDRAULIC, SANITARY & MUNICIPAL ENGINEERING SECTIONS

Mr. C. K. Willey, in charge of planning and preliminary studies at Harza Engineering Co., consulting engineers, will give an illustrative talk on "Hydro Power Economics." He will show the means of integration of hydro-electric and steam generating plants operating on the same electrical system. He will also provide illustrations of the integration of separate hydro electric plants.

Mr. Willey has broad experiences in foreign and domestic fields. Some of his recent work includes plans for hydro-electric development in the Pacific Northwest, the Philippines and India. A brief film will be shown at 6:45 p. m.

December 6, Second Profits Seminar

SPONSORED BY THE JUNIOR DIVISION

WSE's Junior Division will hold its second of four seminars on "Profits and Survival" at 7:30 p.m., Wednesday, December 6, at the society's headquarters. This discussion is titled "Why Are Profits Necessary," and will be moderated by **Daniel K. Chinlund**, Commercial Personnel Supervisor of Illinois Bell. Mr. Chinlund moderates all four seminars.

December 8, Double Header Excursion

WSE members and guests will inspect two large industrial plants in East Chicago, Indiana on Saturday, December 8. The Chicago South Shore leaves Randolph St. at 12 noon, and automobiles will meet the train to take excursioners to the Superheater Inc. plant, where a complimentary luncheon will be served promptly at 1 p.m.

The Superheater tour will include inspection of the fabrication of combustion engineering equipment for diesel and electric trains. At 3 p.m. members will go to the Edward Valve Inc. Co., for the second half of the excursion. There, the production of high pressure, high temperature valves of every size will be observed, and Edward Valve's new laboratory with the latest ideas in metallurgy and design will be viewed. The tour will end at 5 p.m. Special parking facilities will be provided for those persons driving to the plants.

Make your reservations early at WSE headquarters, RA 6-1736, so that you will be certain of luncheon and transportation accommodations.

December 11, Civic Committee

The civic committee will meet on Monday evening, December 11. A postcard will be mailed to all committee members giving the details of this meeting.

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Park Forest - - - Realization of a Dream

By H. Evert Kincaid, Kincaid & Hutchinson

This development is but one result of the desire throughout the country to build new communities complete in themselves, to provide suburban housing at a nominal cost.

Less than three years ago, Chicago's new suburban community, Park Forest, was nothing more than an idea, an ambition in the hearts of noted builders. The now thriving private housing development was conceived and constructed from a beginning no more significant than an abandoned golf course and paper-plotted subdivisions.

Now over 11,250 people live in Park Forest. The first group of approximately 300 homes are under construction for owner occupancy and 3010 party-wall type apartments are already occupied.

However, the dream of building a complete new town met with the bugaboos of most new developments.

Site Selection

Scattered and unknown ownerships, owners unwilling to sell, lack of sanitation and water facilities, poor surface drainage, soil conditions, inadequate transportation services, and the location of existing highways, were but some of the factors which had to be weighed before land purchase could be started or plans of any kind made.

After months of title searches and the taking of options in various locations,

it was decided that the Sauk Trail area offered the greatest advantages for the future occupants of this community-to-be. Here it was possible to assemble 2400 acres of land at a reasonable price. Railroad facilities were ideal to serve the proposed town, both for manufacturing and commercial purposes, as well as for commutation to Chicago and other nearby centers offering employment. The purchased area was protected on the east by forest preserve, a natural scenic spot, and on the south by rugged, wooded terrain. To the west lay the sparsely developed community of Richton Park, and to the north the famous Olympia Fields Country Club. Also, there was land lying along Lincoln Highway, part of which has since been purchased by the Lions International Club for development as its principal headquarters.

Upon acquiring the site, Mr. Nathan Manilow, who fathered the Park Forest project, was then ready to enlist the aid of highly skilled people who would bring together the "know-how" needed to finance, design, and construct one of the largest private housing developments ever undertaken.

From Washington, D. C. came Philip M. Klutznick, who, as Commissioner of

Public Housing during the difficult war years, had successfully met the challenge of building badly needed homes in the arsenal centers of the nation, to become president of American Community Builders, Inc., the developing company created to do the job.

Also attracted from the east were Charles Waldman, a man highly trained in urban engineering, and Elbert Peets, long noted for his contributions in the field of landscape architecture and community planning. Both of these men had played important parts in the building of the government "Greenbelt Towns," located near Washington, D. C., Cincinnati, and Milwaukee.

Consoer, Townsend and Associates, was engaged to prepare the surveys and to design a system of utilities to accommodate upwards of 25,000 people.

Early in the formative stages of the proposed development, Architect Jerold Loeb was attracted into the company as an officer. He brought with him the highly competent skills of his architectural associates, Norman Schlossman and Richard Bennett, a nationally known Chicago firm with much experience in the design and engineering of large scale housing projects, both public and private.

Supporting this team of trained technicians and administrators was a corp

(Continued on Page 4)

Park Forest

(Continued from Page 3)

of legal talent which had to deal swiftly with the problems of land purchase, disannexations, zoning, negotiations for utility services, financing and a multitude of legal matters which can never be seen in the finished product, but are all important toward achieving profitable goals for all concerned.

The stage was set for scores of architects, planners, engineers, and surveyors to begin developing the plans for "Park Forest"—a name well chosen because of the natural surroundings and terrain which give the project a "park-like" character.

The Village Plan

From carefully prepared topographic surveys, a general community plan rapidly took form, with a large shopping center providing the focal point of interest near the geographic center of the purchased area.

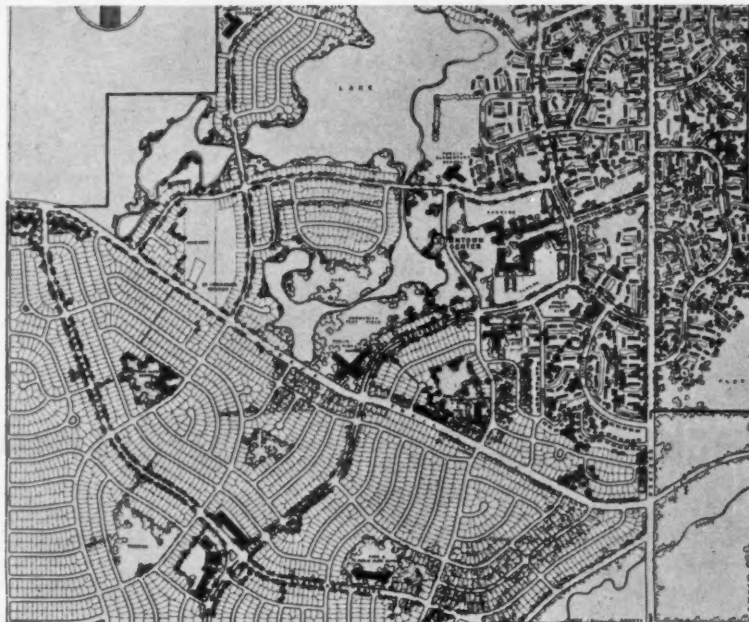
The plan provided for three general areas of development, (1) the rental homes—3010 in number and occupying 316 acres of land, (2) the central shopping center—or "downtown area" to ultimately cover approximately 53 acres with business structures and parking areas, and (3) the "homes for sale" areas occupying nearly 950 acres. The remaining property lying in and around the lakes will be developed at a later date in subdivisions of unusual building sites set in a pattern of parks and water areas.

Detailed plans for the "homes for rent" sections were the first to be developed. Groups of "row type" structures containing 2 to 8 dwelling units were designed about large open spaces within a street pattern forming large blocks into neighborhood units wherein vehicular traffic would be at a minimum.

Within the neighborhoods are generous open areas reserved for schools, churches, playgrounds, public buildings and other facilities essential to the health, convenience and welfare of the people.

Schools and Churches

The planning for church locations and construction has been perhaps unique in the development of American communities. Through the aid and counsel of the Chicago Federation of



Plan of Park Forest development shows centralized downtown area, minimum roads that efficiently serve community. Future park, church and school sites plan for growing community.

Churches, a program has been agreed upon whereby eight churches will provide the various religious denominations with facilities for worship. These church sites are distributed in such a manner as to conveniently serve their members and become real civic assets to the neighborhoods in which they are located. The sites are all large so as to accommodate the parking of vehicles as well as to provide for attractive landscape treatment.

At this time a large Catholic church and parochial school are under construction and likewise a Lutheran church, both designed in modern style by outstanding architectural firms.

The location of school and recreational areas has likewise been given prime attention in the designing of the neighborhood units. The owners and developers of the village have put particular emphasis on the need for open space and have been willing to generously provide land without charge for these public facilities. More than 12% of the gross acreage is devoted to public school sites and parks, not including the proposed large park areas around the lakes.

In addition, as has already been mentioned, more than 1000 acres of scenic land, including a good sized lake, are

contained in the adjacent Sauk Trail Forest Preserve. Within this large area are picnic facilities, shelters, bridle paths and opportunity for nature studies.

The smallest elementary school site is eight acres, with the average being better than 10 acres in area. The selected high school site is comprised of approximately 30 acres, located near the geographical center of the future Village area and will become a part of the central large park development.

F.H.A. Insured Mortgages

The construction of the rental dwelling units and the development of the grounds has been accomplished under mortgage financing insured by the Federal Housing Administration, amounting to more than \$21,000,000. The mortgages have been purchased by several large, well known insurance companies. Valuable counsel was received from officials of the F.H.A. Chicago insuring office and from the F.H.A. land planning consultants during the early planning stages, which has helped make Park Forest a desirable investment risk as well as an attractive place in which to live.

Construction of the first of 3010 apartment units was started in the summer of 1947 and the first tenants be-

gan moving in during September, 1948. By the end of July, 1950 all of the rental homes were completed and occupied—except for 18 units reserved for temporary school use, and 4 units for doctor's offices until permanent structures for these purposes can be built.

There are 204—one bedroom, 3½ room units; 2014—two bedroom, 5 room homes; and 702—three bedroom, 6 room dwellings renting from \$75.00 to \$99.50 per month without utilities, except for water.

The dwelling structures are constructed with a variety of exterior materials. The room sizes are large and one of the features is the amount of storage space in each unit. Each apartment has a full basement and is heated by a gas-fired furnace.

Buildings are grouped around large open courts with parking compounds provided at the rear of all dwellings. Each tenant has private yard space at the front and rear of his home, which he is expected to maintain. But all parkways, courts and play space are maintained by the management.

Utilities

The sanitation problem for this new community has been solved by extending a large trunk line sewer 12,000 feet to connect with the sanitary district system and disposal plant in neighboring Bloom Township, and more than 76,000 lineal feet of sewer mains have been laid within the rental housing project—with trunk lines capable of carrying waste from the proposed expanded areas.

Water supply for the Village is from deep wells drilled upon the property. A water company has been formed and now possesses 3 good wells and a large water softener plant, which is now supplying from 600,000 to 650,000 gallons of palatable water daily to the residents of the Village. Within the shopping center is another well capable of supplying 150,000 gallons of water for air conditioning purposes during the summer period. An overhead storage tank, now under construction, will provide additional storage of 500,000 gallons of water.

A system of storm sewers (37,560 lineal feet of pipe) carries surface water off through natural water courses along

the south boundary of the tract, and through the lake areas which ultimately will become an important scenic asset to the Village—as well as creating unusual opportunities for all types of recreational activities.

Downtown Shopping Center

A well studied and beautifully planned shopping center will provide the village with stores and services of all kinds, as well as amusement and recreational facilities. Canopies overhead will protect shoppers in inclement weather, and will interconnect all structures. There will be no streets to cross within the shopping area since all shops will face onto an open landscaped area, designed for the comfort and convenience of the shopper. Nearly 30 acres of adjacent property circling the shopping area will park over 4000 cars.

Construction has progressed to permit the opening of a large food store, a drug store and restaurant, and a number of small shops supplying children's apparel, shoes, dry cleaning and other services. A 1050 seat theater will soon be completed, attached to another group of stores.

Unusual is this shoppers' service. Each customer will be given a number upon arriving at the "downtown area." All purchases made will be stamped with his

or her number and, if desired, sent to a central point, where upon call from the shopper, all parcels will be loaded into the purchaser's auto or made available for pickup.

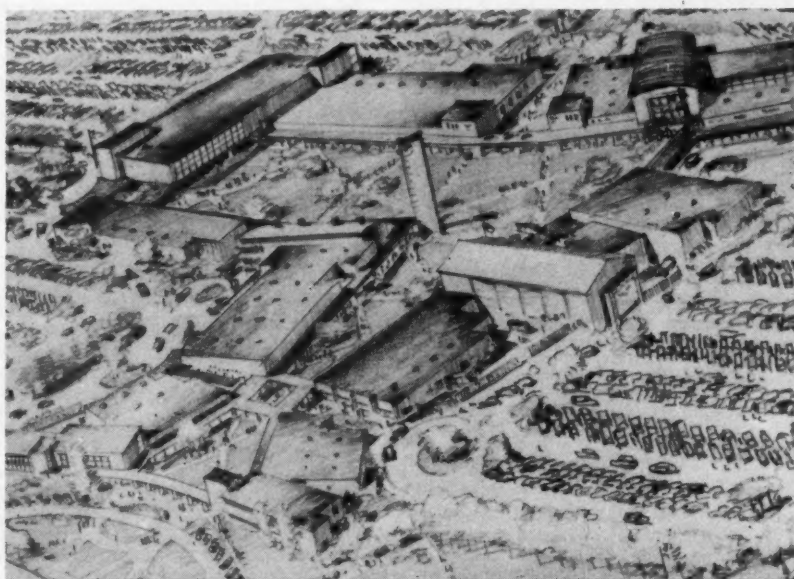
Park Forest Incorporated

On February 1, 1949 the project area, part of which was in Chicago Heights and part in unincorporated territory of Cook County, was incorporated under the laws of Illinois as the "Village of Park Forest."

A Board of Trustees was elected by the people then living in the Village, with Dennis O'Harrar, Assistant Director of the American Society of Planning Officials, becoming the first Village president. Soon all the essential officials were appointed from among many able citizens and the business of running the community was under way.

A fire and police department was formed and equipped with facilities needed to protect life and property. A Plan Commission was also appointed to help shape the plans of the Village for future growth. A School Board was likewise appointed to meet the problems of educating a very rapidly growing child population which has average almost 2 to the family, with one child being of school age.

(Continued on Page 19)



Architect's drawing of the Downtown Shopping Center shows huge parking space to accommodate 4000 cars, overhead canopies to protect shoppers during bad weather.

Great Lakes Bulk Freighter, *"The S. S. Wilfred Sykes"*

This paper presents the design characteristics of the first completely new Great Lakes bulk freighter to be built in many years.

**By E. B. Williams, Kent C. Thornton,
W. R. Douglas and Paul Miedlich,
Members**

The Society of Naval Architects and Marine Engineers

In comparison with other Great Lakes freighters, the Sykes reaches well beyond anything yet built. In fact, it reaches considerably beyond some available channel depths today, as well as the average loading and unloading facilities. It will be some years probably before her full capacity can be used.

The ore trade on the Lakes dates back nearly 100 years. The discovery of mineral deposits in the Lake Superior region stimulated the construction of the first lock at the Soo in 1855. Then came the transition from sail to steam and from wood to steel.

Today we have this situation. The Great Lakes ore fleet numbers 230 vessels, the average age of which is about 40 years. The average deadweight capacity per vessel is about 11,300 long tons at the maximum free board draft. These deadweight figures vary from a little over 6,000 tons to 21,700 for the Sykes. The annual ore-carrying capacity of the fleet is from 80 to 85 million tons.

Corrosion has never been serious on the Great Lakes, and the hulls of many of the vessels are in fair condition despite their age. Superstructures, deckhouses, inner bottoms and sides have been replaced in some instances, repaired in others.

However, if this fleet is to be kept in operation, a major reconditioning program is imminently necessary, together with new construction to replace obsolete

tonnage. Any new project is given close economic study, and the largest ships which can be fitted into the service receive most serious consideration. The trend is also toward materially increased power. Present-day labor and material costs emphasize the uneconomic position of the small and medium-size freighters, yet, under the present setup and location of unloading docks, many must continue to serve for years.

Since the recent war there has been much doubt expressed about the future supply of iron ore from the Lake region.

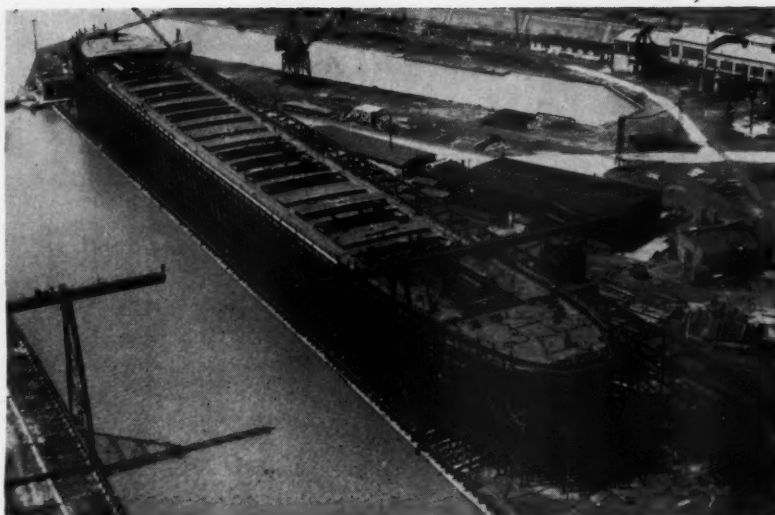
If an exhaustion of the ore supply was expected there would be no ship construction on the Great Lakes, and little, if any, reconstruction.

Fortunately, no such calamity confronts us today. Mr. M. D. Harbaugh, vice-president of the Lake Superior Iron Ore Association points out that the most critical factor in the present iron ore situation is not the total recoverable tonnage, but the rate at which it can be produced.

Mr. Clarence B. Randall, president of Inland Steel, effectively covers the



Side launching of the Sykes required additional labor, additional anxiety. Unusual type of launching into the narrow basin could have meant considerable damage to the Sykes.



S. S. Wilfred Sykes under construction at the American Ship Building Co. yards.

subject of raw materials for the steel industry in his article "The Iron We Need," published in the June, 1948 issue of *The Atlantic Monthly*. His belief in the future of Lake Superior iron ore production is exemplified in the construction of the *Wilfred Sykes*.

Building the "Sykes"

The *Wilfred Sykes* was designed for the Lake Michigan trade—Duluth to Indiana Harbor. No other factors were given consideration. There will be an occasional cargo loaded at Escanaba, on Green Bay at the northern end of Lake Michigan, and possibly a load or two of stone each year from Port Inland, nearby. Upbound trips almost invariably will be in ballast. The *Sykes* is a "private carrier", handling Inland Steel materials only. She is a special purpose ship—one specific link in the movement of iron ore from the mines to the furnaces which is figured accurately into the cost of this transportation.

It was a foregone conclusion in designing the *Sykes* that the vessel should be as long and as wide as construction berths, dry docks, loading and unloading docks would permit. It was also advisable to design for the deepest possible draft. The other basic consideration was speed. The block coefficient was kept at the highest level without undue sacrifice in propulsive efficiency.

The specifications and contract plans for the *Sykes* were prepared by The American Ship Building Co. Construction orders were released in June and the

keel was laid on November 1. The vessel was launched on June 28, 1949 and delivered to the owners on January 12, 1950.

The extent of welding and riveting in the design, and also the amount of prefabrication, depended to a large degree on the yard arrangement, crane capacities, and other practical considerations. As in the case of most of the older yards, fabricating area is at a premium. If there had been additional new construction while the vessel was on the ways, the problem would have been serious. However, it was possible to use two other building berths for fabricating area and storage space which made an ideal setup. Prefabricated sections were assembled and welded and then transferred by rail to the hull under construction.

The vessel was constructed on a level keel, elevated sufficiently above the ground level to give ample working headroom and to provide for the transverse launching ways. These were placed in position later, as the hull approached completion.

Undoubtedly, more labor is required to prepare a vessel for side launching than for end launching, customary on the coast. All staging on the water side must be removed and the entire vessel must be transferred from the supporting shores to the launching ways, located at about 10-foot centers. Sliding ways are placed over the ground ways, together with longitudinal timbers and packing to support the hull evenly. Several thousand

wedges are driven between the sliding ways and the packing above to release the original shores.

One might question the engineering soundness or even the sanity of attempting to launch so large a vessel into so small a basin. Not only must the declivity of the ways be sufficient to carry the inboard bilge past the ledge of the dock, but the travel must be arrested in just 120 feet to prevent damage at the other side.

Just before launching, the hull is held on the ways by five 8-inch Manila ropes at each end. Each rope is led around the end of a trigger timber or lever and back over a cutting block. Dog shores extend from the hull to the triggers at 45 degree angles. Jack shores with hydraulic jacks are located on the opposite side. Just before cutting the ropes, the hull is actually packed along the ways about an inch to be sure that it is "alive." All ten ropes are cut at the same instant by "guillotines" actuated electrically from a push button on the launching stand.

At the time of launching, the main hull and internal construction was virtually complete. During the succeeding months, the machinery and piping installations were completed.

Hull Design

We have endeavored thus far, to provide a suitable background to the design and construction of the bulk ore carrier *Wilfred Sykes*. The vessel operators made an economic survey of their particular trade routes and concluded that the best ship for their service would be the largest possible to build and operate.

The *Syke's* dimensions were limited by the existing shipyard facilities on the Lakes. The following table on page 8 shows the resultant principal characteristics.

A model testing program was used. As a result the built-up propeller design was selected on the basis of good model results, and because it has many advantages in Great Lakes service. The propellers on these vessels are subject to frequent damage from ice, docks, channel banks, or floating obstructions. With a built-up propeller it is possible to change one or more blades quickly without drydocking the vessel, saving time and money.

(Continued on Page 8)

Principal Characteristics of the Wilfred Sykes

| | |
|---|------------------|
| Length over-all | 678 feet |
| Length between perpendiculars | 660 feet |
| Breadth, molded | 70 feet |
| Depth at side, molded | 37 feet |
| Draft, keel, maximum summer load line | 25 feet 8 inches |
| Displacement, molded, in fresh water, tons | 38,330 |
| Block coefficient | 0.87496 |
| Displacement, total, fresh water, long tons | 28,510 |
| Light ship weight, long tons | 6,810 |
| Deadweight, total, long tons | 21,700 |
| Capacity, holds, self-trim, cubic feet | 801,400 |
| Fuel-oil capacity, gallons | 165,000 |
| Portable water capacity, gallons | 39,000 |
| Reserve feedwater capacity, long tons | 12,310 |
| Shaft horsepower, normal | 7,000 |
| Revolutions per minute at normal power | 100 |
| Sea speed, statute miles per hour | 16 |
| U.S. gross tonnage | 12,730 |
| U.S. net tonnage | 7,875 |

The lines developed for the *Wilfred Sykes* are the cumulative result of studies and tests extending over a period of years. The most obvious change from the conventional ore carrier is the use of a cruiser stern to replace the elliptical stern. Model tests made as early as 1938 indicated that the use of the cruiser stern would produce several advantages. The ship's resistance is reduced materially, and better flow conditions to the propeller are obtained. The latter contributes to a higher propulsive efficiency which when applied to the lower resistance results in substantial savings in power.

The stern outline is relatively higher than on most deep-water ships in order to accommodate the largest possible propeller with a limited draft. The cruiser stern lines are somewhat finer near the bottom and fuller near the waterline than the usual elliptical stern vessels.

Machinery Selection

In order to maintain consistently a sea speed of 16 miles per hour loaded, it was decided to install a power plant that would deliver a normal shaft horsepower of 7,000 at 100 revolutions per minute at the propeller.

Besides the known power requirements, there are other important features desirable in machinery for Lake vessels. Frequent dockings, usually without tugs, and navigation of the locks and rivers dictate that the machinery must be easily and quickly maneuverable and must have good backing power. The efficiency should remain high at reduced speeds,

since certain runs must be made with the engines checked. The full power should be obtainable over a range of revolutions to encompass both light and loaded trips.

The latest types of reciprocating steam engines meet the Lake requirements perfectly with good efficiency. However, they could not be considered here because the required power was too high.

It was finally decided that geared turbines would meet most of the requirements quite satisfactorily, particularly on the run intended for this ship. The final selection called for cross-compound geared turbines, and oil-fired watertube boilers.

Long Accepted Hull

Fundamentally, the hull arrangement of Lake vessels was established many years ago as being the most functional for the purposes of loading and unloading. The arrangement has been perpetuated by the growth and development of the dock facilities, and it is unlikely that it will be changed.

In general, the *Sykes*, like all of its predecessors, is arranged with its cargo hold in a continuous unbroken length amidships, with the machinery aft. The pilot house and accommodations for the deck crew and guests are at the forward end in a forecastle and forward deck-houses. The engine-room crew, commissary crew, galley and dining rooms are located within the poop and the after deckhouse.

The main hull is divided by six transverse bulkheads forming seven main compartments.

There is an inner bottom which extends throughout the length of the vessel from the fore peak bulkhead to the after peak bulkhead. In the machinery space it is 5 feet above the keel, and throughout the rest of the vessel it is 6 feet above the keel. For strength purposes, the two levels are joined by a sloping section 12 feet long at the forward end of the machinery space.

The spaces forward and aft of the cargo hold are further divided by two decks below the upper or so-called "spar deck." In these Lake vessels the uppermost continuous deck is called the "spar deck" although it might also be called the main deck, bulkhead deck, strength deck, or freeboard deck.

The first deck below the spar deck at the forward end is called the lower deck. It extends from the stem to the forward end of the cargo hold.

The second deck below the spar deck at the forward end is called the main deck. It extends from the fore peak bulkhead to the after end of the ship. Aft of the dark hold this deck becomes the first deck below the spar deck. Throughout the cargo the main deck runs parallel to the keel, and extends 8 feet inboard from the shell.

At the after end of the vessel in the machinery space, there is a horizontal deck below the main deck called the "operating deck."

Longitudinal bulkheads are constructed on the port and starboard sides extending from the fore peak bulkhead well aft into the machinery space. The spaces between these bulkheads and the shell and below the main deck are used for water ballast, except in the machinery space where they are used for fuel oil.

At the forward end of the ship there is a full forecastle extending 63 feet aft of the stem. Its interior is arranged to accommodate the forward anchor windlass and quarters for the deck crew.

An innovation on a Lake vessel of this type is the use of a full poop aft, which is about 80 feet long. It was decided to use a poop deck to gain additional draft and additional space for quarters aft.

(Continued on Page 22)

Ex Mayor and WSE Life Member Dies at 74



Since his death, Edward J. Kelly has been eulogized by all the newspapers and lauded for his rise from underprivileged beginning to the office of mayor of Chicago. This tribute is to Kelly the engineer who brought many beautiful and necessary improvements and benefits to Chicago.

Edward J. Kelly, member of WSE since 1915, died suddenly on Friday, October 20, at the age of 74.

Following services at Holy Name cathedral, his body was interred in the family vault in Calvary cemetery.

The ordinary obituary would not be appropriate for Ed Kelly because Ed Kelly was no ordinary man. His deeds influenced the lives of the masses and millionaires alike. Everyone, from the side street shopkeeper to the head of colossus corporations was affected by his personality and policies.

"Big Ed," as he was affectionately called by his admirers, died as he had lived, "with his boots on" . . . boots in which he strode from a humble beginning to national fame.

Many citizens will think of Kelly only as a politician, condemning him or condoning him from their respective party viewpoints. He was called both savior and scoundrel by the multitudes he touched.

To be sure, Mr. Kelly was a mayor, a Democratic national chairman, but first, and even last, Kelly was an engi-

neer . . . an engineer, not because he had the advantage of a formal education, but because he had the dream of building a bigger and better Chicago and the necessary determination to achieve his goal.

The fact that he rose from the job of axman up through the various grades of engineer with the Sanitary District of Chicago to the top position of chief engineer in 1922 is mute evidence of his technical and administrative ability. For it was only after this time that Ed Kelly ran for public office.

Aside from his renown as a political figure, Ed Kelly is probably revered most for being sensitive to the plight of the underprivileged. As a cabbie put it, "Yeh, he was quite a guy, he made a buck, but he let the little guy make a buck too."

Civic "priders" will remember his and Mrs. Kelly's success in establishing and operating the city's Service Men's Centers during World War II, giving Chicago its unequaled reputation for hospitality.

Ed Kelly maintained continuous

membership in WSE for 35 years, a membership he valued highly. As one of our fellow WSE members, we see in Kelly the engineer and engineering administrator, the civic leader and philanthropist. We see also the civic projects which he is credited with having brought to fruition: the Adler Planetarium; the Shedd Aquarium; the restoration of the Fine Arts building, now the Museum of Science and Industry, in cooperation with the late Julius Rosenwald; the unification of transportation facilities; the improvement of State street. Future historians will also dwell on Kelly's financial genius. He was the man who put Chicago's credit back on its feet.

This brief glimpse of Edward J. Kelly's career as engineer, administrator and citizen should demonstrate to the young engineer that, through an awareness of people and their problems, it is possible to rise from an obscure beginning to an outstanding future, perhaps not as mayor of Chicago, as Ed Kelly was, but as a contributor to Chicago's maturing magnificence.

METROPOLITAN MENACE

Air Pollution in the Chicago Area

By Jas. R. Allan, Mgr.
Industrial Engineering and Construction Dept.
International Harvester Co.

Part of a W.S.E. Panel Discussion Held Last Spring

Air pollution to most people means the pollution of the general atmosphere with smoke from various combustion devices. Unfortunately, the general atmosphere is polluted with many forms of contaminants, namely, vapors, fumes, particulate matter, gases, and compounds of many types, generated from many sources, and to quite an extent, contributed by the complex commercial, industrial, and home life that we call our advanced civilization. In fact, it involves every phase of human activity. Unfortunately, nature itself adds many complications to the problem.

Populations in urban areas have for centuries been somewhat conscious of the health and property damage factors and acutely aware of the nuisance value created by air contaminants and pollution. But in the main, they have pretty generally felt that coal smoke was the root of all their troubles.

The air pollution problem is a serious one and is further complicated by the fact that while we understand some phases of the effects and control of the problems, there is a great deal that we do not know about it and its effects on the span of life, property damage and economic factors. We also need more knowledge of control or preventive measures.

A problem as serious as this requires a certain amount of legislation that will give intelligent regulatory control over flagrant cases where air contaminants are uncontrollably discharged into the general atmosphere, with no regard to the hazards created and nuisance factors involved.

History of Smoke Control

Laws and regulations controlling in general, smoking, arising out of some combustion processes date back many centuries. A royal proclamation in England was issued in 1306 which prohibited artificers from using coal in their furnaces, and commanded them to return to the fuels they originally used.

It is reported that in the next year at least one smoke offender was executed.

Our immediate interest, of course, is our problem in the vast Chicago area and what is being done about it. Let's take a look at Chicago's work on smoke abatement over a period of time.

Seventy-six years ago in Chicago a Citizens Committee was organized. It undertook to determine some of the legal aspects of the problem of smoke prevention and to cooperate with smoke inspectors in prosecuting serious smoke offenders. This gave rise to the first municipal ordinance exercising control

over such matters in April 1881.

When the Columbian exposition of 1893 was under consideration, there was organized a voluntary organization to deal with smoke pollution. Also organized at the same time was the Society for the Prevention of Smoke, to work out improvements in smoke control during the exposition period. Funds for operating these committees were raised by subscription and they entered into a strong educational program.

In 1904 the Municipal Art Leagues Committee on Smoke Prevention backed a strong campaign for law enforcement on smoke violators.

In 1908 the Hamilton Club tried to work up enthusiasm for a railroad electrification program with the thought of minimizing smoke.

During this same year a special committee under the direction of the Mayor of Chicago and the Committee on Local Transportation, submitted a lengthy report on "Electrification of Railway Terminals" and "A Cure for Locomotive Smoke Evil in Chicago."

The following year, 1909, the Chicago Association of Commerce undertook the direction of an educational movement in the abatement of smoke and today is even more vigorously carrying on this campaign. The Association entered ac-

tively into the proposed electrification proposals, resulting in 1915 in a voluminous report entitled "Smoke Abatement."

It is important to note that industry and commerce in Chicago were instrumental in introducing the first Smoke Ordinance in 1881. There have been many changes in the Ordinance and the method of administration, through the years, but all during this period, industry and commerce have been closely identified and cooperating with city officials in trying to reduce smoke pollution of the Chicago atmosphere.

Current Control Efforts

With this brief historical background, we should now examine the present efforts towards a solution of air contaminants problem.

Shortly after the close of World War II, such men as T. E. Donnelly (who helped organize the Smoke Abatement Department in the early 1900's), Edw. J. Doyle, President of Commonwealth Edison Company, E. E. Brown, President of the First National Bank, R. L. Williams, Chicago & Northwestern Railroad, and J. L. Palmer, President of Marshall Field & Company, advised and counselled with the Chicago Association of Commerce & Industry to start a new campaign on Smoke Abatement, with the result that on Feb. 25, 1946, the Cleaner Air Committee was formed under the able and experienced leadership of Verne G. Leach, Combustion Engineer, Peabody Coal Company. Both industry and commerce is represented on this committee and in addition, some of our City Administrative officials, in particular Mr. Frank Chambers, head of the city's Smoke Abatement Department.

The main committee, among other things, has placed emphasis on the following activities: Analysis of Air Pollution Data; Education Program, including meetings, bulletins, leaflets, pamphlets, newspaper releases.

A phase of the Cleaner Air Committee activity is beginning to produce very definite results in the organization of industry subcommittees. These subcommittees have a very special knowledge of the individual industry problems and can reach that segment of industry and commerce that they represent.

Such a sub-committee is the Railroad Executive's Sub-committee, lead by E. E. Chapman of the Santa Fe Railroad. Some 20 railroads are represented on

this committee, and in close cooperation with Mr. Chambers of the Smoke Abatement Department of Chicago, a great deal has been accomplished in minimizing smoking of locomotives, round-houses and power plants.

Two years later a Foundry Executive's Sub-Committee was formed under the chairmanship of Jas. R. Allan. Due to the many different types of foundries operating in the area, subcommittees were set up representing: Gray iron foundry industry, malleable foundry industry, non-ferrous foundry industry, electric steel foundry industry, converter foundry industry. In addition to these foundry groups, there is set up a medical sub-committee of industrial hygienists and industrial physicians, under the chairmanship of Kenneth M. Morse, Chief, Division of Industrial Hygiene, Illinois State Department of Public Health.

Last February, a Utilities Executive's Sub-Committee was formed under the chairmanship of Alex G. Bailey, Vice President of the Commonwealth Edison Company.

The most recent sub-committee formed was on March 22, 1950, when the Steel Executive's Sub-Committee was organized under the leadership of Mr. Bennett L. Liversey of the Carnegie Illinois Steel Co.

Abatement Activities

The first step taken by these subcommittees is to inaugurate educational programs to train personnel on how to fire and handle their equipment with a minimum of smoking. Conferences are held with representatives of the city's Smoke Abatement Department and others having any special knowledge on the subject matter. Special efforts are made to get the full cooperation of the owners of the businesses.

The foundry sub-committee is also devoting its attention to other processes that produce air contaminants other than that arising from products of combustion.

Visits are made to one another's foundries and every attempt is being made to educate the operating personnel on how to operate their equipment so as to reduce the amount of contaminants dispersed into the general atmosphere.

We realize that as long as there are human activities there will be a man-

made portion of the over-all air pollution problem. All we can hope to do is to reduce this pollution to a minimum by better operation of our existing equipment. We think much can be accomplished by this approach. Until we do, we feel that expensive devices and substitutes should be left to a second phase of the campaign.

No Absolute Air Control

Regardless of how well we can accomplish any results, there is an outstanding factor that we might just as well realize and understand, that there will be an irreducible minimum amount of air pollution and that we cannot achieve a condition of no air pollution at all. This is understandable because any combustion process becomes an air contaminant source whether it is a house owner's gas hot water heater, house heating plant, or factory equipment. Dust arresters, collectors, and precipitators are not made that produce 100% collection efficiency, and there is of course the economic factor concerning costs that must finally be dealt with.

Our big problem today is how far can we reduce air contaminants to the so-called irreducible minimum by intelligent study and operation of our existing equipment and processes. The possibilities are great for a considerable reduction in the controllable amounts of air pollution but industry alone is not responsible for all of the air pollution problems. Commerce and home owners are definitely involved in the campaign if a reasonably ideal situation is to be attained on lowering the controllable portion of air contaminants.

It is intended that eventually all segments of industry and commerce in Chicago will have subcommittees of their own working on their individual problems that they understand better than anyone else.

It is in this manner that industry is contributing of its technical and experienced manpower to study the problem of air pollution and contaminants and strive for the goal of the irreducible minimum. To accomplish the results strived for, there must be the closest cooperation with regulatory authorities and also any special agencies having considerable experience or interest.

(Continued on Page 25)

Bridge Rebuilt, As Traffic Continues

Our front cover aerial photo views the work on one of the most unusual bridge construction jobs in railroad history.

An old steel bridge span, 70 feet high and 518 feet long, with this inscription on her face: "1887 Cairo 1889" dropped 100 feet to a watery fate on November 9.

From temporary falsework, a steel cradle 100 feet above the Ohio River at Cairo, Illinois, the huge framework of steel slid off into the water to be cut up for scrap. The inscription refers to the year the bridge was started and opened to railroad traffic.

This old span was the first to be "launched" under the reconstruction plan for the 61-year-old Illinois Central bridge by the American Bridge company, a U. S. Steel subsidiary.

Too light now to support the heavier, faster trains of today, the old span, which weighs 1,100 tons, was supplanted by a huskier, modern span weighing 1,760 tons in a unique engineering feat completed Monday, October 16th.

The old span was rolled over to rest on temporary falsework and the new span rolled into place in just 20 hours. This unusual feature of bridge building was devised in order to interfere as little as possible with the flow of traffic over the 3,900 feet of single-track bridge being re-built.

On a steel sled with wooden runners already greased the old span is now poised for a slide into thin air. A trigger device holds the sled in place on the temporary falsework and when engineers are ready, the trigger will be released. Then, gravity and the Ohio River will claim the old span.

The operation resembles the launching of a ship except, of course, no 518 foot long ship would be allowed to fall 100 feet into water. After the old span raises its expected mighty splash, bridgemen with cutting torches will cut it up for scrap.

The old channel span which gave rides to thousands of trains over the year was completed in 1889. At that time the Cairo bridge was considered the world's

longest steel structure crossing a river. It was 10,560 feet long. Heavy traffic made it necessary to build a double track embankment in 1906 which shortened the bridge to its present overall length of 7,865 feet.

The "launching" of the old span completes the first phase of the operational plan for the re-construction. As each new span is completed it will be erected alongside the corresponding old span until the old is rolled over. In all, there are twelve new spans, two of 518 feet, four of 400 feet, and six of 197 feet. The entire job calls for the use of approximately 10,000 tons of steel.

When the old spans are moved over, flooring, ties and rails are removed before they are dropped into the river. The new spans are rolled in complete with ties and rails laid ready for traffic. Thus, the delay in traffic is expected to be less than one day for each span.

Defense Transfer Admin. Established

Commissioner James K. Knudson of the Interstate Commerce Commission has announced the establishment of an agency to control domestic rail, highway and inland waterway transportation under the Defense Production Act of 1950. The new agency, which will be known as the Defense Transport Administration, has been assigned supervision of priorities and allocations of domestic transportation, storage and port facilities, excluding air transport, pipe lines and coastal, intercoastal and overseas shipping.

As commissioner in charge of the ICC's Bureau of Service, Mr. Knudson is charged, by executive order of the President, with the responsibility of administering the functions to be carried out by the new agency. He has announced that assisting him as administrator of DTA will be a deputy adminis-

Chapman Sets Up Defense Petroleum Agency

Secretary of the Interior Chapman has announced the establishment of the Petroleum Administration for Defense to administer the responsibilities with respect to petroleum and gas delegated to him by the President under the Defense Production Act of 1950.

The new Petroleum Administration will receive and evaluate the requirements of various claimant agencies for petroleum and gas and, if necessary, allocate these products among the various claimants.

Secretary Chapman will be the Petroleum Administrator. Pending appointment of a Deputy Administrator, who will be the operating head of the Administration, Hugh A. Stewart, present director of Interior's Oil and Gas Division, will serve as Acting Deputy Administrator.

trator; executive assistant; general counsel; equipment and materials division; manpower division; domestic transport, storage and port specialists; industry consultants; information officer, and administrative officer. Personnel to fill these positions have not been selected as yet but most appointments are expected to be made within the next two weeks.

The functions of the new agency will be similar to those of the former Office of Defense Transportation. However, DTA is expected to make use of as many existing facilities of ICC as possible to avoid work duplication and its staff will probably be kept small, at least in the early stages of operation. Mr. Knudson has indicated that his most pressing problems at the present time are the manpower situation and the railroad freight car shortage.

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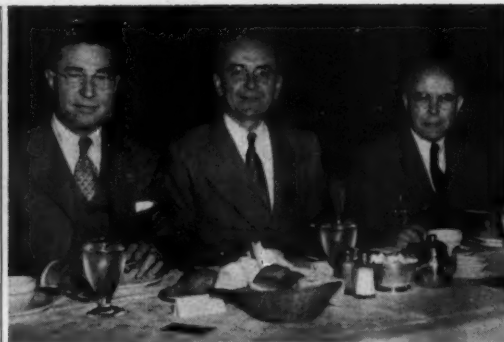
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At the speakers table: left to right, J. Earl Harrington, exec. secy.; Leroy F. Bernhard, trustee; John F. Sullivan, Jr., treas.; Gustav Egloff, past pres.; William V. Kahler, past pres.; Col. John Slezak, speaker, and H. P. Sedwick, pres.

FALL DINNER FLASHBACKS



When Bill Kahler asked me some time ago to talk to you I accepted without hesitation because it is always a pleasure to spend an evening with a group of engineers. However, on second thought I had some difficulty in deciding what to talk about, not because of lack of important subjects, but because it was very hard to foresee in July what might be an important and interesting subject to you in October. Yes, gentlemen, the events governing our attitudes toward our immediate environment are moving that fast! But here again Bill had the answer. He said, "Talk about something that has to do with carrying on the war—the engineer's place in things. That is always timely." So that is how all this came about.

The 364 WSE members and guests who gathered at the Furniture Club for the Society's annual fall dinner heard President H. P. Sedwick tell that WSE finances are in excellent shape. They were also privileged to hear speaker Colonel John Slezak. The following is a reprint of his speech.

Gentlemen, the half-way turn of the Twentieth Century finds the entire so-called civilized world gripped in a battle of ideologies on a scale such as has seldom been experienced in the entire history of mankind. As a matter of fact, it reminds one of the days when the Christian world was fighting with the Mohammedan world for supremacy in the Eighth and Ninth Centuries. Tragically, the rank and file of our people are either indifferent to or do not seem to understand the momentous drama taking place right under their noses, yet our way of life for many generations to come will depend upon our actions today.

Remember this my friends, the United States of America today is the only country in the entire world where an individual is still more important than the State, and where the most precious of all possessions—the freedom of opportunity—still does exist. But we are losing our ground fast, and what is even worse, we are not losing it to an outside aggressor but to our own apathy and disinterestedness in our American way of life, in our American free enterprise system, and in our government. Over a period of years

we as a nation have repeatedly lulled ourselves into assuming that the huge economic resources of our nation, by themselves, constitute military strength, and that in case of need we could, overnight, raise a well equipped army equal to meet any emergency. Preparation for war was of little or of no importance.

However, when in 1941 we were faced with a tragic reality, it soon became obvious even to the politicians that the economic resources and the military strength of our nation were not synonymous. We suddenly became aware of the fact that while all male citizens capable of bearing arms are an economic and military resource, only trained soldiers can make an army. By the same token, we realized that while iron ore in our mines is an important economic and military resource, only a cannon in action on the battlefield constitutes military strength. In other words, the military strength of a nation is only that which it can bring to bear at the critical point on the field of battle, and it takes time and energy to convert the gigantic economic resources such as ours into mili-



More speaker's table diners: left to right, Donald N. Becker, 1st v. p.; Ovid W. Eshbach, 2nd v. p.; Ludwig Skog, trustee; Verne O. McClurg, past pres., Arthur W. Howson, trustee; L. E. Grinter, trustee William R. Marston, program chairman.

tary strength. If the Korean incident has taught us anything it has certainly taught us that.

Traditionally, we have always been a peace loving nation with no imperialistic designs or ambitions. Therefore the idea of waging preventive wars to preserve peace is and always has been unthinkable and repugnant to us, consequently we are committed to the working philosophy of being prepared to defend ourselves and our way of life against all possible aggressors. And that, gentlemen, is a difficult if not impossible task.

You as engineers, I am sure, must realize the feeling of frustration and futility our military leaders must be experiencing in time of peace when they are trying to get us ready to defend ourselves against an unknown enemy of unknown strength at an unknown time and in unknown places, and of course traditionally to do it without disturbing our

normal way of life, and without spending too much money. I seriously doubt that in a democracy such as ours it is possible for us to be so armed as to be instantly ready to take on all comers without at the same time sacrificing our standard of living and our way of life. It is quite obvious that the rapid advances that are being made not only in the design of military weapons but also in military strategy make it futile to have any large stores of munitions of all types ready for action, because that in itself would constitute our Maginot Line which would hide nothing but our ignorance and weakness. Because of our traditional attitude, our strength must always lie in our ability to produce competent leadership and in our ability in times of emergency to convert our economic resources into military strength quickly and effectively.

That this can be done was clearly dem-

onstrated during World War II, and I believe, gentlemen, that you will agree with me that World War II has given us a clear demonstration that the American free enterprise system and our way of life have produced an answer to this ever-present problem of national defense. The answer lies in the fact that our greatest undeveloped resources are not in our factories, not in our mines, not in our farms, but in the ability of our people to produce, and consequently our greatest defense weapon is the management of our industries, and let us never forget that. Obviously, gentlemen, that is where you come in. Your opportunities to serve your country in this national defense picture are practically unlimited. Not only will industry be called upon to step into this job on a much larger scale than we have seen so far, but all of the technical services of the U. S. Government are being expanded very rapidly and the need for the technically trained men will be increasing day-by-day.

Therefore, let me give you an example of how an engineer, a technically trained man of any type, or a scientist can fit himself into this scheme of things and become a more effective citizen in the service of his country. Most, if not all, of the technical services of our Armed Forces, and in fact virtually all government agencies, are working in close cooperation with the civilian industry and with other various civilian agencies, and the results are paying off well for all of us. As an example, the Ordnance Department of the U. S. Army is one of the best illustrations of what I mean. For instance, when the using services of the Army, such as Infantry, Artillery, etc., ask that they would like to have a

(Continued on Page 26)



Donald N. Becker, William Kahler, Colonel Slezak and H. P. Sedwick join in conversation during the Fellowship hour before dinner. Col. was the banquet speaker.

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Book Browsings

Available at WSE Headquarters

Atomic Energy Uses

Constructive Uses of Atomic Energy, edited by S. C. Rothman. Harper and Brothers, New York, 1949. 258 pages. \$3.00.

This is a collection of papers by fourteen leading authorities on atomic energy and its applications. All are reprinted from previous publication in various scientific journals, with the intention of collecting into one volume a survey of the application of atomic physics to other sciences. Most of the material was originally published between 1946 and 1948.

The opening chapter, by Dr. A. H. Compton, discusses the philosophical, social and political implications of atomic science. This is followed by a popular-styled explanation of atomic theory and the process of obtaining energy from the atom. The remaining chapters deal with the applications of atomic energy and its by-products to a number of fields of science, partly as accomplished fact, and partly as speculation about future possibilities. The specific applications discussed are to: industrial and scientific research, industrial power, chemistry, metallurgy, aviation, ceramics, soil fertilizers, biology, pharmacy and medicine.

W. F. L., WSE

Electric Waves Outlined

Fundamentals of Electric Waves, 2nd edition, by Hugh Hildreth Skilling. John Wiley and Sons, Inc., New York. 245 pp. \$4.50.

This revised edition represents a further improvement in Dr. Skilling's excellent outline of electromagnetic waves. The material on wave guides, reflection phenomena and wave propagation in semi-conductors has been expanded. The discussion of antennas as completely re-written and a chapter has been added dealing with propagation in ionized regions. In this edition, conversion to MKS units has been made throughout.

Without over-elimination of mathematics, this book presents in a clear and logical manner, an elementary treatment of electro-magnetic fields and waves in what is probably as readable a style as can be devised for a technical subject. The meaning of the equations used is nicely translated into words, and interpretation of results in terms of familiar physical situations enables the reader to visualize readily what they mean.

In short, the book is recommended to any electrical engineer who wishes to extend his knowledge beyond the limits of circuit theory.

W. F. L., WSE

Flood Control

Floods! Their Hydrology and Control, by H. K. Barrows. McGraw-Hill Book Company, Inc., New York, 1948. 432 pp. \$6.50.

The importance of the study of flood control is well shown by two facts: flood losses in the United States in the last 30 years were over two billion dollars, and those for the single year 1937 were over half a billion dollars; and Congress has authorized flood control projects since 1938 to cost about four billion dollars.

This book deals with the principles of flood hydrology, the many uses of the flood hydrograph, spillways and spillway gates, the benefits of flood relief, reservoirs for flood control, local flood protection works, Federal flood legislation, economic aspects. The treatment of the flood hydrograph and of the general framework for flood control study are special features.

The author also reviews the reports of the U. S. Engineer Corps relating to flood control projects. The principal river basins in the United States are described, with their flood control works as built or projected. A somewhat detailed description is given of the most important floods in the United States, and the resulting damage.

This book will be a valuable addition to the library of flood control engineers and officials.

H. F. W., WSE.

Architectural Masterpieces

The Architectural Work of Graham, Anderson, Probst and White and Predecessors (Vol. I) March, 1933.

This book is devoted to the illustration of museums, auditoriums, railway terminals, public buildings, department stores, hotels, warehouse and general items throughout the United States. It was published privately for Graham, Anderson, Probst and White for gratuitous private circulation. The printing was limited to three hundred copies.

The foreword gives some interesting data regarding the architecture as a historical document from prehistoric times. It also outlines in a general way the advances in building construction beginning with the development of the skeleton framework of iron in the exterior walls which was the inception of the modern skyscraper.

The book contains 187 plates, including floor plans and beautiful photographs of the more prominent buildings. There are also many photographs of interior details.

(Continued on Page 23)

Crerar

News and Notes

Sometimes the commonplace escapes attention, and it usually does in stories of libraries. One of the commonplaces in the library is the problem of binding. The thousands of scientific, engineering and medical periodicals received by Crerar, must be bound. This is not a simple task. Missing issues, *mutilated* issues (yes, we have that problem too), and just the lack of enough hands, combine to make the job of getting the periodicals bound too much to handle.

The Library has suffered this experience over a period of years. During 1950, however, a task force has been devoted to bringing our binding up-to-date. Personnel has been begged, borrowed and *stolen* from all departments to get this part of our housekeeping in order. We hope there has been some noticeable improvement in service to readers, for this has been and will remain our purpose.

The Chicago Chemical Library Foundation has recently added an additional 75 titles to the list of journals in chemistry and chemical engineering which it purchases each year for the Crerar Library. This raises the number of "CCLF" journal subscriptions to about 200. A description of the CCLF program for strengthening the chemistry collections of the Library was given in this column in the March issue of the *Midwest Engineer*.

At its October meeting, the Board of Directors of the Library formally appointed Kenneth H. Fagerhaugh as Assistant Librarian to succeed Kanardy L. Taylor. Mr. Fagerhaugh joined the staff of Crerar on April 1, 1948 as Research Librarian and was responsible for the direction of the Research Information Service during the first two and one-half years of its development. Previous to coming to the Crerar Library, Mr. Fagerhaugh was associated with the plutonium project at Oak Ridge during the Second World War, and later as librarian for Rohm and Haas of Philadelphia, and of the research and development branch of the Army Quartermaster Corp in Philadelphia.

MIDWEST ENGINEER

WSE Luncheon Speakers Inject New Interest

Something new has been added to the luncheon hour at Western Society of Engineers. Top men in a variety of fields are scheduled to speak every Thursday noon. Although the talks are short, 20 to 25 minutes, WSE members and their guests have the opportunity of learning facts of interest on many subjects concerning the engineer.

Stanley Forsythe, chief engineer of Chicago Transit Authority spoke at the first luncheon meeting. His topic was "Use of Propane As a Fuel for Buses."

Second luncheon speaker was Oliver Fields, Director of the Bureau of Investigation, the American Medical Association. His subject was the current front page story on the revelation of "Quacks in Medicine."

L. W. Tuttle (WSE), assistant manager of gas operation, Public Service Co. of Northern Illinois spoke at the third luncheon. His subject was on the repairing of a 5 million cubic foot gas tank.

Thursday, November 30, the speaker will be Elmer R. Knight, engineer of express highways, state of Illinois, who will speak on "Expressways in Illinois".

Phone your reservation to Society Headquarters, Ra 6-1736. The cost is just \$1.15.

These luncheon-meetings are splendid opportunities to acquaint guests and possible new members with facilities and functions of WSE. So take advantage of them—bring your friends next Thursday at 12:15 p.m.

ASME Nov. Meetings

"Application of Steels to High Temperature Service" will be the title of a talk on Tuesday, November 14, at 7 p.m. This meeting, sponsored by the Junior Group, will take place in the Social Room, Whiting Community Center, one block off 119th St. & Indianapolis Blvd., Whiting, Indiana.

Mr. C. L. Clark, Metallurgical Engineer, the Timken Roller Bearing Com-

pany will be the speaker.

On Tuesday, November 21, Edwin Vennard, vice president, Middle West Service Company will speak on "Government in the Power Business." This meeting will take place at the headquarters of the Western Society of Engineers, at 84 E. Randolph St. A 6:15 p.m. dinner will be held in WSE's dining room.

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W. W. DeBerard Celebrates 75th Birthday

More than 300 friends joined Mr. W. W. DeBerard (WSE), in celebrating his 75th birthday at a luncheon in the Illinois Room of the LaSalle Hotel, on October 31.

Mr. DeBerard, a member of Western Society of Engineers since 1910, was appointed City Engineer in 1941, and holds that position at the present time. He received honorary membership in the A.S.C.E. in 1950.

Mr. DeBerard was presented with a Lyon & Healy spinet piano in recognition of his many years of splendid service to the engineering industry and the great friendships he has made.

John Tansey (WSE), assistant to the Commissioner of Public Works, James Weeks (WSE), mechanical engineer in charge of operations, Bureau of Engineering, and John McDonough were the chairman of the birthday luncheon. Mr. McDonough acted as master of ceremonies, and John Tansey made the presentation speech.

Other members of the Western Society of Engineers seated at the speakers table were Mr. H. P. Sedwick, 1950-51 president of WSE and vice-president of the Public Service Company of Northern Illinois, and Mr. Charles B. Burdick,



W. W. DeBerard

life and honorary member and partner in the firm, Alvord, Burdick and Howson.

Mr. DeBerard, who was Western Editor of *Engineering News-Record* for 25 years before his appointment as City Engineer, was born in Fairfax, Iowa, and graduated from Beloit College and M.I.T.

Since 1941, when Mr. DeBerard became City Engineer of Chicago, he has been particularly active in the improvement of the water supply and distribution for the City and in the modernization of its bridge facilities. During this period, the 320 mgd. South District Filtration Plant, costing about \$26,000,000, was completed and put in operation.

In carrying out his conception of an engineer's responsibility to his profession, Mr. DeBerard has been active in many organizations. An associate member of the American Society of Civil Engineers since 1906, and a full member since 1926, he served as a Director in 1933-40, and President of the Illinois Section in 1933.

He served as a Director of WSE's Traffic Engineering and City Planning Section in 1939-40, and was Chairman of the Section in 1942-43. He was Chairman of the Engineering History Division in 1944-45, and was a WSE representative on the Washington Award Commission from 1935 to 1937, and from 1947 to 1949.

He is a Life Member of the Western Society of Engineers and has served the Society as a Director and Vice President. He is an Honorary Member of the American Water Works Association and has served as Director and President of the Illinois Section of that organization. He was one of the founders of the Federation of Sewage Works Association and has been its Treasurer since its inception. He is a member of the Central States Sewage Works Association, the American Association of Engineers, the American Society of Sanitary Engineering, and an Associate Member, and member of the Highway Research Board, of the American Road Builders Association.

Mr. DeBerard has a Life membership in the Chicago Engineers' Club, of which he served as Director in 1935-37.

In spite of the limitations imposed by wartime conditions, during the eight year period Mr. DeBerard has served as City Engineer, he has supervised the construction of two major bridges and the world's largest filtration plant, and has directed improvements in the water distribution system which have greatly reduced leakage and unaccounted-for water. The two city departments under his charge have approximately 3,000 employees.

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Memos on WSE Members

While compiling the 1950-51 Year-book we discovered a myriad of changes in business connections and positions of WSE members. Here is just a scattering of these changes, some top news, some slightly outdated. If you have any news about yourself, anything from a promotion to a new telephone extension, please write, phone or walk right into the office and tell us about it. Other WSE members want to know about YOU.

Mr. LeRoy F. Bernhard of the Illinois Bell Telephone Co. was promoted from cost studies engineer to plant extension engineer on October 1, 1950. Mr. Bernhard, a trustee of Western Society, has been active on its committees since he joined in 1930. Mr. Bernhard has been a staff member of Illinois Bell since before his graduation from Armour Institute in 1929. He was the technical director of the "Looking Ahead" exhibit at the Chicago Fair of 1950 and in Springfield.

John F. Parmer is now a member of the firm of Frank J. Kornacker and Associates, Inc. Mr. Parmer was formerly chief structural engineer with Mundle, Jensen and McClurg. He is the chairman of WSE's educational committee.

Elmira, New York member, Theodore K. Rikken is now an electronic engineer with Remington Rand. Mr. Rikken was the general manager of the Elmira Electronics Corporation.

Another out-of-towner, Max Schlesinger, has changed positions. Mr. Schlesinger is now design engineer Heyl & Patterson, Inc., Pittsburgh. He was previously associated with the Ainsler Morton Corporation, as supervising engineer.

Robert W. Schirmer has stepped into the presidency of the Hendricks Corporation, Chicago, from his former office of vice president and chief engineer.

Peoples Gas Light & Coke Co. announced the promotion of George A. Morgan as superintendent of their Market Research department. Mr. Morgan was formerly assistant statistician.

Roy M. Schultz now works at the D. A. Freeman Corporation. Mr. Schultz was chief engineer of the Ezra Meter Co.

Charles G. Rummel of Naess & Murphy now department head.

Another promotion of a WSE member is Gilbert Rockel, formerly a civil engineer at Construction Aggregate Corporation. He is now Construction Aggregate's chief engineer.

WSE student members prove that good engineering jobs are available. Alfred R. Sadewic is plant manager of the International Forge Co.

Lee Schlesinger now reports to work at the Soil Testing Service, Inc., as a soils engineer. Mr. Schlesinger worked as a graduate assistant at I. I. T.

Another Illinois Tech. graduate, Oliver Landry, Jr. is an engineer-draftsman for the City of Chicago's Bureau of Sewers.

Another recent promotion is the appointment of Richard G. Fencel as traffic engineer of the Chicago Park District. Mr. Fencel was the assistant traffic engineer for the Park district.

News along a slightly different line, Dr. Eugene Mittelmann, consulting engineer, read a paper on "Measuring Properties During HF Heating" before the Sixth National Electronics Conference at the Edgewater Beach Hotel in Chicago this fall.

Obituary

Moses Alperin, a Western Society of Engineer's member since 1936, died September 30 after a heart attack. Mr. Alperin was a prominent lawyer and engineer. He was vice president of the Warren Construction Co. of Chicago and a member of the Chicago and Illinois Bar Associations.

John Johnsen, a member of Western Society of Engineers since 1919 and a life member since 1949, died August 30. He was 68 years old.

Mr. Johnsen was an employee of the Peoples Gas Light and Coke Co. for 47 years, and superintendent of the company's 22nd St. station when he retired in 1946.

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The S. S. Wilfred Sykes

(Continued from Page 8)

There are three deckhouses—two forward, and one aft. The lower house forward is located on the forecastle deck and is called the "Texas house." The space in the Texas house is devoted entirely to guest quarters.

The house above the Texas house forward is built on two levels. The upper-forward level accommodates the pilot house and chart room, while the lower-aft level houses the captain's quarters.

The after deckhouse is located on the poop deck and is arranged to accommodate the commissary spaces and the ventilating fan rooms.

Appearance of the "Sykes"

There has been a great deal of talk about "streamlining" ships. The true concepts of streamlining do not apply readily to bulk ore carriers without jeopardizing some of their efficiency of arrangement. However, the builders recognized the desirability of modernizing the appearance of this vessel as much as possible. From the very beginning of the design the utmost importance was attached to considerations of appearance both in general design and the design of details.

In the general arrangement of the vessel, the exact size and location of the deck erections was studied carefully to produce a vessel of good proportions and pleasing appearance. The bulwarks were extended well out onto the spar deck to minimize the abrupt change in profile at the ends of the forecastle and poop. The stem was given additional rake which helps conceal the extreme fullness at the forward end. The upper houses, overhangs, and bulwarks were shaped to conform with the general scheme. The forward end of the pilot

house was sloped aft and the roof sloped forward to compliment the general lines.

The stack was designed not only to carry away the boiler gases, but also as a device to balance the masses at the forward end of the ship and to carry out the modern motif. In addition, the band around the stack is polished stainless steel emblematic of the business of which the vessel is a vital part.

In addition to the measures taken to satisfy the general rules of scale and proportion, a great deal of attention was given to all details to assure that they would add to the general appearance. All superfluous detail was eliminated. The masts are self-supporting without shrouds or stays. Ventilators, tanks, etc., were made part of the structure, rather than separate appendages, so that the appearance would be as clear as possible.

As a final touch, the owners consented to depart from their standard painting scheme in order that a new layout could be created for this ship.

Structural Design

The shell was designed with lapped and riveted seams and flush welded butt joints. Contrary to usual practice, all strakes of plating were "clinker" with the upper edge of the plates on the outside. This arrangement of plating not only assisted in the erection, but also will make shell repairs easier for there are no inside strakes.

The inner-bottom structure is entirely welded, and all of the welds are continuous. These continuous welds are used as a further measure to resist heavy impact stresses.

Throughout the structural design, very careful attention was paid to design details to eliminate as far as possible points of stress concentration which might be the starting point of a crack.

In addition, further precautions were taken to prevent the propagation of a crack, should one start. It is felt that with the riveted shell and deck seams, the riveted gunwale connection, and riveted attachment of the shell and decks to the frames and beams, the maximum protection has been provided to prevent cracks from traveling into adjacent members.

Attention must be drawn to the special stiffening required to minimize damage at the docks and in the locks. The shell areas at the forward and aft ends of the parallel body and above the load waterline are subject to severe damage from frequent dockings. These areas are stiffened especially by intermediate web frames and additional longitudinal frames.

The *Wilfred Sykes* was designed to provide the maximum protection against sinking that is possible without jeopardizing its efficiency of operation. The longitudinal side tanks have been extended forward through the dark hold to the collision bulkhead and aft through most of the engine room. The side tank bulkheads extend from the inner bottom to the spar deck and have been moved farther inboard. The minimum distance from the shell is 8 feet instead of 5 or 6 feet, resulting that in the event of collision the side of the vessel would have to be ruptured to a depth of at least 8 feet before the holds would be flooded. The ship will not sink if any two ballast tanks are flooded, because of their length.

The *Wilfred Sykes* became the first Great Lakes ore vessel originally built for oil-fired steam propulsion machinery. This was because Inland Steel had fuel oil storage tanks at their Indiana Harbor Plant, so that it is possible to take

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WSE Women Drive for New Members

Attention ALL Members! Do you have women engineers or architects working in your organization who should become acquainted with the Western Society of Engineers and the Professional Women's Council—REMEMBER—a new woman member of WSE counts just as large in the new member column as a new man. Tell her about the Prof. Women's Council or give her name to us and we'll get busy!

The November Prof. Women's Council meeting was held Wednesday November 8th at 7:30 P.M. preceded by a get-together dinner.

Miss Iris Ashwell, Chairman, conducted the meeting and lead the discussion of the report made by the special committee on "Employment Problems of Professional Women," Mrs. Dorothy Merrill, Chairman.

Watch for the Festival of Fun on Monday evening, Nov. 20th. Bring that prospective member and show her—or him—all is not work but some play when they join WSE!!

"The S.S. Wilfred Sykes"

(Continued from Page 22)

on fuel while unloading, saving turnaround time.

Exceptional Accommodations

It was decided that all licensed officers of the vessel would have single staterooms and all other crew members would have double rooms. The captain and chief engineer would each have private offices and all staterooms would have adjoining bathrooms.

In addition to the crew's quarters

there are four guest staterooms, a lounge and a guest dining room. There are two recreation rooms for the use of the crew members.

All living and working spaces are insulated with 2 inches of fiber glass. The linings, ceilings and interior non-structural bulkheads are fireproof asbestos board, except those in the captain's, chief engineer's and guest quarters which are paneled in wood with decorative veneers.

Full mechanical ventilation is provided for all living and working spaces throughout the ship.

A single fresh water system is provided for all drinking, washing and sanitary purposes. Storage is provided in two tanks, one forward and one aft, with a total capacity of 39,000 gallons. All water is chlorinated before entering the storage tanks. It is customary to fill the tanks directly from the lake.

In the Sykes, the use of electric power surpasses that of any previously built ship on the Great Lakes, for it is the first vessel built for this service in which all of the ship's auxiliaries are motor driven with but one exception, the standby lubricating-oil pump, which is steam-driven. Alternating current at 440 volts with its inherent features and simplicity of control was chosen as the most economical power for this installation as compared with direct-current power with its intricate and costly starting equipment and high maintenance cost.

This is just a very brief description of the *Wilfred Sykes*. If you'd like more information on the freighter write the Society of Naval Architects and Marine Engineers, 29 W. 39th St., New York.

Book Review

(Continued from Page 18)

The more prominent buildings in Chicago familiar to every one are the Field Museum of Natural History, John G. Shedd Aquarium, Museum of Science and Industry, The Civic Opera House (now known as the 20 North Wacker building), Chicago Union Station, Marshall Field and Company Store, Butler Bros. and the Merchandise Mart.

The book gives a pictorial record of accomplishment of the firm and predecessors from 1894 to 1933 and should be of specific value to persons interested in architecture and of general interest to a very large number of people.

(NOTE:) The book was originally given to the late W. R. Abbott, former president and later chairman of the Board of the Illinois Bell Telephone Company. Mr. Abbott's family is donating it to the Western Society of Engineers; did so in the hope that here the book would become available to the largest group of people having an interest in architecture and building construction.

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Dr. Rettaliata Talks On Jet Planes in Korea

Dr. John T. Rettaliata (WSE), dean of engineering and newly elected vice president of Illinois Institute of Technology spoke recently on the performance of jets in Korea. Dr. Rettaliata is one of the nation's foremost experts on jet propulsion. The following is a resume of his speech.

The Korean war is the first in which American jet planes have seen actual combat duty. Despite extremely unfavorable operating conditions, and notwithstanding some reports to the contrary, the jet is giving a good account of itself in combat. It can be reasonably stated that it has prevented a Korean Dunkerque. It is unfortunate, however, that this plane should receive its baptism in a type of war for which it was never intended. In a relatively undeveloped country like Korea, where the pack mule and the coolie are frequently superior to modern military transport, it is difficult to employ latest military developments to advantage at all times.

The jet plane is a high speed, shorter range, type of aircraft which has been handicapped by a lack of adequate airfields in the vicinity of the combat zone. The F-80 jet fighter, the kind being used

in Korea, has a range approximating 1000 miles. It has been operated from bases in Japan, about 400 miles from the battle line, with the result that the pilot has only about 10 or 15 minutes combat time at the scene of the fighting before he has to return to his base for refueling. Poor weather conditions have also forced the jet to launch rockets at 3000 feet altitude instead of a more desirable elevation of 5000 feet. Consequently, the gliding, instead of diving, approach has caused some rockets to ricochet off enemy tanks without apparent damage.

The F-80 has been used for low-level strafing although it was never designed for such service. Its high speed makes this a difficult operation but it can still be used for this purpose, providing adequate ground-air communications exist for pilot direction. The ineffectiveness of the communication system in Korea has reduced the performance capabilities of the F-80 through no fault of the plane itself. A recent example of faulty communications is the error bombing of British troops by American planes. In a fighter plane high speed is always an asset and the pilot with the fastest ship has the advantage, whether he be engaged

in aerial combat or getting away from enemy anti-aircraft fire after launching a rocket attack.

The F-51 piston engine-propeller fighter plane has been operating from bases in Korea and has done a creditable job. Much of its effectiveness, however, is due to the fact that the enemy has used practically no air power. When and if he does, the jet plane, due to its superior speed, will be the only adequate countermeasure, particularly if the enemy should use jets.

Any jet planes employed by the North Korean communists would obviously be supplied by Russia, which has several very good types. The best Russian jet fighter is the Yak, reportedly capable of speeds up to 650 miles per hour. The Yak design reflects the influence of several countries. In outward appearance it resembles the American F-84. The many German jet engineers captured by the Russians have also undoubtedly contributed to the Russian jet program. Ironically, the chances are that any Yaks to appear in the Korean conflict would be powered by jet engines sold to the Russians by the British. The same engine is used in some American Navy jet fighters. For a country which has claimed parentage to so many new inventions, Russia has shown a surprising lack of originality in its aircraft designs.

In conclusion, the F-80 jet plane operating in the Korean war is doing a remarkable job considering the many obstacles and unfavorable conditions with which it has to cope. Much of the criticism which has been directed at it could more properly be applied to our military unpreparedness, brought about by a too drastic economy program which has resulted in inadequate supporting operations necessary to the satisfactory utilization of jet planes.

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Air Pollution

(Continued from Page 11)

Drastic legislation or ordinances cannot accomplish a so-called atmosphere condition, free of contaminants, because in addition to the economic factors, there are many factors beyond human control, such as geographical and topographical conditions, wind movements and turbulence, temperature inversion, climatic conditions, etc. Such types of legislation and harassment and lack of understanding of the problems of industry and commerce can result in closing down of establishments, resulting in reduced employment, or the moving of establishments to country areas and the rapid deterioration of urban areas.

Questions to Consider on Plant Locations

We think that with a fuller realization of cause and effect of air pollution that the problems of air contaminants must receive adequate consideration by owners and engineers in industry and commerce, when locating a new plant or enlarging or modernizing an existing facility. A few factors that suggest themselves are:

A. Are your operations and products going to be affected by atmospheric contaminants from some adjacent enterprises that may be doing all in its power to keep to the irreducible minimum?

B. Are your operations, no matter how well you control them, going to give rise to justified complaints from a residential neighborhood or some other enterprise whose product is sensitive to air contaminants? In other words, are you going to be welcome in the neighborhood?

C. Possibly the U. S. Weather Bureau should be contacted to learn all you can

about the locality regarding the behavior of weather, wind velocities and direction and temperature inversion, as it may affect your operations, or as to how your operations affect the general area. You probably are familiar with the Donora, Pa. and Los Angeles, Calif. situation where weather conditions are much involved.

D. What is the attitude of the local regulatory authorities regarding air contaminants? Is it one of a constructive approach to the air pollution problem, or is it one of harassment?

E. A careful engineering study should be made of any of the processes or operations that tend toward liberating quantities of air contaminants, namely, smoke, particulate matter, fumes, vapors, gases, etc. that might lead to a nuisance problem or produce a local hazard. Equipment should be installed to approach the irreducible minimum condition, either by modification of the process of application of adequate and efficient collectors, arrestors, precipitators, etc.

F. In the past few years with modern boiler installations having induced draft fans and equipment, there has been a trend towards stub stacks to reduce the fan horsepower, but with a better understanding of horizontal wind velocities and air temperature differentials that effect rapid contaminant dispersal into the general atmosphere, there is every indication that our old high masonry, concrete, or steel stacks may be back with us to obtain the results we are after. I am thinking of 200 to 350 ft. above grade levels. This may bring about other problems concerning aeroplane traffic hazards.

This whole problem of air contaminants in the general atmosphere is going to be with all of us all the time and every indication is that it is going to receive a great deal more attention as time goes on. It is a challenge to owners of all kinds of establishments and one that must receive the cooperation and constructive attention of engineers, scientists and federal, state, and municipal agencies interested in health and kindred problems.

I do not mean to belittle the gigantic size of the problem. Many phases of it are not too well understood. But possibly, we can make an approach to it in much the same manner that many of us in industry approached the safety problem, and particularly occupational disease control some 18 or 20 years ago. We can consider the problem in urban areas as if they were processes and operations contained within a manufacturing or processing building. Maybe the approach to the solution of the irreducible minimum levels can be made a little more realistically.

I believe this last suggestion is well to keep in mind as it may help us keep our feet on the ground and appraise the problem a little more objectively.

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Col. Slezak

(Continued from Page 15)

weapon with certain specific military characteristics, the question is discussed with a suitable committee composed of civilian scientists to determine whether in the light of our present knowledge such weapon is a possibility or if certain types of research might be fruitfully followed to bring about the desired results. After the desired weapon has been developed and a pilot model built, it is in many, if not in all, cases referred to a suitably constituted industry advisory committee for review. Among the more important questions that such a committee tries to answer are: can this weapon as designed be produced economically with the currently available facilities? Can the design be changed to make it more effective and cheaper to manufacture without losing any of the military characteristics? Can it be produced from more easily available materials without affecting adversely any of the military characteristics? And so on. The service on these committees often involves a

large amount of time, work, and travel, and the members serve without any compensation from the government. As presently constituted, the membership of these committees is largely selected from personnel of corporations which have had experience in the manufacture of similar items. For instance, practically all members of various ammunition components committees come from corporations which have had experience manufacturing ammunition components during World War II. Truly, gentlemen, as General Campbell, who was perhaps the greatest Chief of Ordnance this country ever had, has characterized this, it is an industry-ordnance team in action for the best interest of our country. Obviously the time and expenses of these men are generally paid for by the individual corporations involved. This is one of the many ways of how some of you can be of service without leaving your present jobs.

Now, gentlemen, I have given you only the high lights of a typical procedure of how a new weapon comes to be. Naturally, the details are somewhat more elaborate and perhaps, at times, more complicated, but essentially the principles remain the same. The fact is that our military leaders believe in the strength and effectiveness of our American free enterprise system, and they believe that they get the most effective results by closest cooperation with American industry and by calling upon the resources and ingenuity of the men whom our free enterprise system has developed.

It certainly would be wonderful if many of those who are critical of our industrial system, of our industrial leaders, would demonstrate their patriotism

in as constructive and in as effective a manner.

The Korean incident has brought us face to face with the possibility that we may again have to mobilize a large portion of our manpower and material resources for war. Here again the engineer and his training are of tremendous importance.

We have learned many lessons during the last war. For instance, our appropriations for ordnance materiel in 1940 were \$30,000,000; in 1941—\$3,750,000,000; in 1942 they amounted to the staggering sum of approximately \$30,890,000,000. It left us all in a daze, and pessimists cried that it could not be done. But, gentlemen, it was done. The genius of the American free enterprise system was fully harnessed into this task, and responsible men, mainly with a production and engineering background, were called into government service by the hundreds, and truly a citizens' army sprang seemingly out of nowhere. There was no time to train and to develop men. Men competent to handle difficult tasks of procuring billions of dollars worth of munitions had to be found to function at once. Now, gentlemen, where could our government find such men but with American industry, and who could have been more competent to furnish them than American industry? Unfortunately history is repeating itself much too soon, and your opportunities to serve our country again are simply unlimited.

Let me give you some examples. For instance, men will be needed by various technical services to direct the design, development, and procurement of many complicated weapons and other war materiel, and frankly, industry will be called

(Continued on Page 28)

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Use Engineer-Power Effectively, Dr. Heald

To meet the demands of a combined civilian-military economy, industry must use its engineering manpower more effectively at the highest level of competence, Dr. Henry T. Heald, (WSE) president of Illinois Institute of Technology and past president of Western Society of Engineers, said today.

Dr. Heald spoke at a luncheon meeting of the annual industrial engineering conference of the Chicago section of the Society for the Advancement of Management, meeting on the Illinois Tech campus.

"The drop in engineering enrollment in the nation's colleges will be little short of disastrous to the industrial production we must maintain to support both our civilian economy and our military effort," he said.

He urged industrial leaders to recognize that the supply of engineers will be inadequate for the next few years and to take steps immediately to improve the competence of their engineers at all levels.

"Industrial management should encourage and support, verbally and financially, enrollment in formal evening classes and in-service training programs," he said.

It shouldn't be necessary to rely on federal aid to education or to wait upon congress to start ESMWT (engineering, science, and management war training) programs.

"Private individuals and firms should do the job now and not wait on the federal government," he said.

A preliminary survey of freshman engineering enrollment this fall indicates 27 per cent less students than a year ago and 20 per cent less than in 1940. Enrollment of other types of students is down only about 10 per cent this year, he pointed out.

"If proposed draft procedures are invoked, engineering graduates in 1954 will total less than 7,000. We can't maintain ourselves adequately with less than 25,000 graduates a year, and this figure will not be reached in 1952 or 1953."

"Fluid Oil Gasification" Explained—

"Fluid Oil Gasification" was the subject of a talk by Captain E. S. Pettyjohn, Director of Institute of Gas Technology. His speech before the Gas, Fuels and Combustion Engineering division of WSE was the culmination of a project sponsored by the American Gas Association for a method of peak shaving and emergency use in Metropolitan areas where gas consumption approaches 300-500 MMCF per day.

The following is a resume of Captain Pettyjohn's talk.

In the production of high-Btu oil gas, the increasing dependence on higher carbon content, high specific gravity petroleum fractions with the operational difficulties encountered in gasifying these oils in sets employing checkerbrick has led the Gas Production Research Committee to sponsor a study of the fluid process as a part of the PAR plan of the American Gas Association.

Checkerwork in oil gas sets is subject to degradation by spalling through contact with large volumes of oil and plugging with excess carbon and ash accumulations. In the fluid unit, highly mobile heat transfer media are used to gasify the oil and the excess carbon deposited on the solids is burned to supply the necessary heat for gasification.

The fluid process as demonstrated by the oil industry is readily adapted to handle large volumes of feed which, for the gas industry, would mean high-Btu oil gas makes of 40-100 MMCF per unit day. These capacities are desirable for base load production and are necessary for peak shaving and emergency use in natural gas territories where consumption approaches 300-500 MMCF per day in single metropolitan areas. The investment cost per MCF daily capacity decreases progressively with the size of the fluid gasification unit so that large

U. S. Steel's 3 Step Increase

Benjamin F. Fairless, president of United States Steel corporation announced the second step in its expansion program, which upon its completion, will add 500,000 tons of further ingot capacity annually. Under this second step, the annual ingot capacity of Tennessee Coat, Iron and Railroad company, U. S. Steel subsidiary at Birmingham, Ala., will be increased from 2,850,000 tons to 3,350,000 tons. It is expected that this additional capacity can be made available within 18 to 24 months after the commencement of the work.

The building of an eastern seaboard steel mill on the main banks of the Delaware River near Morrisville, Pa., will constitute the third step in this program. How large that plant will be, and what kinds and quantities of finished products will be made there, has not yet been determined, and will depend upon the defense and military needs of the country.

The first step, presently underway, in this program was announced last July. It is to improve and add to the existing facilities in the Pittsburgh and Chicago districts.

units may be purchased at costs substantially lower than for the multiple present day units which would be required for the same volumes. This anticipated lower investment cost, combined with the ability to use lower cost oils with complete independence as to character, Conradson carbon and ash contents, should make the fluid process an economical solution to the production of high-Btu base load or substitute gas.

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Opportunity For Engineers

According to a statement made by Dean J. F. Smith, of Iowa State College, there is now a temporary minor surplus of engineers in the United States, but this will pass very quickly. "In a few years," says the Dean, "in all phases of engineering, there will be far more jobs than engineers to fill them. If the present trend continues, at no time in the next 15 years will there be enough graduates to fill the demand."

(Continued from Page 26)

upon to furnish competently trained men for both sides—that is, for itself and for the government. There is no other place for the government to get them, and governmental agencies have no time nor facilities to train them. There will be need for many highly trained technical inspectors to supervise these huge and complicated projects. There will be need for men to serve on various technical committees that made such tremendous contributions to our success during the last war, such as the *industry integration committees*, *machine tool committees*, *price adjustment committees*, and I could name many others. And frankly, my belief is that if industry furnishes men for these agencies these men will understand the problems confronting industry better than men without such industrial or technical background and experience. So I hope that management of our industries will again rise to the occasion and will be not only willing but anxious to give up some of their best men so that the relationships between governmental agencies and industry can be conducted in an atmosphere of understanding and mutual respect.

However, above all, the most important thing an engineer can do in these critical days, or at any other time, is to be a good practicing citizen. I was amazed to learn just a short time ago that in our present Congress we have approximately 235 lawyers in the House and 66 lawyers in the Senate, and as far as the record tends to show, not one engineer in either place. No wonder we are in a mess.

Remember this my friends, our type of democracy requires an intelligent, active citizenship for its success. That is the basic principle of our way of life. We cannot delegate the duties of citizenship any more than we can delegate someone to practice our religion for us. We have practiced the philosophy of "let George do it" much too long, and the consequences are tragically serious. Instead of solving our social and economic problems as far as possible at home, we have gotten into the habit of running to Washington with our problems. After all, the men at Washington cannot make as intelligent decisions as we can concerning our own intimate daily problems of life.

Furthermore, I don't have to tell you engineers that no government can give you anything without first taking it away from you. Government does not create, it spends; it is, in the long run, like a slot machine—you can never get as much out of it as you put into it. Therefore, to the extent that we let government do services for us which we should be doing for ourselves, to that extent we are losing the guts, the stamina that made the American nation what it is today.

No, gentlemen, let us not accept the so-called inevitable but instead let us be as the term engineer implies—captains of our souls and masters of our fates.

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WSE Applications

In accordance with the By-laws of the Western Society of Engineers, the following names of applicants are being submitted to the Admissions committee for examination as to their qualifications for admission to membership into the Society in the various grades, i.e., Student, Associate, Member, Affiliate, etc. All applicants must meet the highest standards of character and professionalism in order to qualify for

admissions, and each member of the Society should be alert to his responsibility to assist the Admissions committee in establishing that these standards are met. Any member of the Society, therefore, who has information relative to the qualifications or fitness of any of the applicants listed below, should inform the Secretary's office, 84 E. Randolph St., RA ndolph 6-1736.

- 44-82 Robert J. Hughes, Fire Protection Engineer, Marsh & McLennan, 231 S. LaSalle St.
- 45-82 J. Roland Carr (Rein.), Associate Editor "Engineering News-Record," McGraw-Hill Publishing Co., 520 N. Michigan Av.
- 46-82 Grady L. Roark, Regional Manager, Tube Divisions; General Electric Co., Merchandise Mart Plaza.
- 47-82 Henry Rothschild, Electrical Engineer, W. B. Engineering Co., 8 S. Dearborn St.
- 48-82 David M. Wilson, Assistant & Commercial Engineer, Illinois Bell Telephone Co., 230 W. Washington St.
- 49-82 Maurice S. Watson, Asst.-Office of Research Engineer, Public Service Company of Northern Illinois, 72 W. Adams St.
- 50-82 Keith E. McKee (Trsf.), 2nd Lt., U.S.M.C., The Basic School, Marine Corps School, Quantico, Va.
- 51-82 David G. Uitti,—attending Michigan College of Mining & Technology, (Douglass Houghton Hall, R-163), Houghton, Mich.
- 52-82 Paul M. Uitti,—attending Michigan College of Mining & Technology, (Douglass Houghton Hall, R-163), Houghton, Mich.
- 53-82 Franklin E. Bosworth, Resident Engineer; DeLeuw, Cather & Co., (Chicago), New Jersey Turnpike.
- 54-82 Constantine Stamis, Structural Engineer, Holabird & Root & Burgee, 180 N. Wabash Av.
- 55-82 Theodore M. Vanderstempel, Engineer, City of Chicago, Bureau of Street Traffic, R-709 City Hall.
- 56-82 William A. Kuechenberg, President, R. B. Hayward Co., 1714 Sheffield Av.
- 57-82 John E. Kreiner, Regional Sales Engineer, Edwards Co., Inc., 600 W. Jackson Blvd.
- 58-82 Milton Miller, 3012 Wilson Av.,—attending Illinois Institute of Technology.
- 59-82 Guy C. Rudd, Engineer, Public Service Company of Northern Illinois, 1001 S. Taylor Av., Oak Park, Ill.
- 60-82 Vernon W. Lester, Sales Engineer, J. O. Ross Engineering Corp., 201 N. Wells St.
- 61-82 Paul H. Savukoski, 3754 N. Kildare Av.—attending Illinois Institute of Technology.
- 62-82 Charles J. French, Jr., Assistant Engineer, National Concrete Masonry Association, 38 S. Dearborn St.
- 63-82 Howard W. Gustafson, Assistant Division Manager, Phillips Petroleum Co., 7 S. Dearborn St.
- 64-82 Robert D. Garden, Personnel & Public Relations, A. J. Boynton & Co., 109 N. Wabash Av.

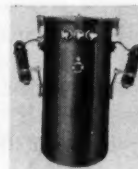
- 65-82 Clifford J. Doubek (Trsf.), Chemical Engineer, Johnson & Johnson, 4949 W. 65th St.
- 66-82 W. G. Jaros, Sales Engineer, Master Builders Co., 228 N. LaSalle St.
- 67-82 Francis A. Penning, Engineer, C. A. Jenks & Co., 343 S. Dearborn St.
- 68-82 Hollace L. Cox, District Construction Supt., Montgomery Ward & Co., 619 W. Chicago Av.
- 69-82 Terry Glenn, Junior Engineer, Yeomans Bros. Co., 939 W. North Av.
- 70-82 Basile Christoforacos, Roll Mill Worker, Carnegie-Illinois Steel Co., 3426 E. 89th St.
- 71-82 Harry S. Baut, Sales Engineer, Pittsburgh Corning Corp., 205 W. Wacker Dr.

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Park Forest

(Continued from Page 5)

One of the most difficult problems to be solved in the building of a new community is providing school facilities prior to the time when tax levies can be made and taxes collected for educational purposes. To meet the need until such time as permanent school buildings could be constructed, the American Community Builders reserved some of the apartment structures for that purpose. The first permanent school is now under construction within the Village and others will be built out of the revenues of the School District. Fortunately, many of the children coming from the early families to take up residence in the project, were able to enroll in established schools in Chicago Heights operated by another School District having jurisdiction over a part of the project area—thereby relieving some of the pressure for schooling in the new community during the early stages.

Homes for Sale

In June of 1949, as the last of the rental units were under construction, American Community Builders began giving specific thought to the development of the next 950 acres for their "homes for sale" program. Many families occupying the rental units had already indicated a desire for "their own home" in Park Forest. But first, subdivision plans had to be designed and engineering plans prepared, and the land made ready with utilities and streets to serve the homes.

For this work the firm of Kincaid and Hutchinson was engaged to prepare the plans and to coordinate the surveys and engineering of land improvements

in collaboration with the engineers, Consoer, Townsend and Associates.

Four complete neighborhoods, each with a large school site and park, have been developed in plan, wherein are to be constructed approximately 2800 single family homes. Also, 2 additional shopping centers, other church sites, and some additional space for multiple family units have been made a part of the project. The framework of principal streets sketched in the preliminary town plans by Elbert Peets was maintained and supplemented with a system of minor streets which closely follow the natural contours of the land. There are a total of 33 miles of streets serving the Village in its present plan of development, of which 20 miles are of new construction with varying pavement widths to suit the contemplated traffic needs.

Only twenty-one per cent of the gross area of developed land has been dedicated to streets, yet adequate circulation of traffic can be provided in all areas.

Street Improvements

Pavements specified are black top surfacing, bounded by rolled concrete curbs and gutters. Sidewalks are being constructed on both sides of the street and adjacent to the roadways on minor and lightly traveled residential streets. Definite economies are to be realized and certain desirable advantages gained in building sidewalks as an integral part of the paved surfaces.

Underground utilities are being placed within the parkways except for storm sewers. All wires for electric and telephone services will be underground conduit where crossing streets or for reaching outlets for street lighting. Poles will carry the lines overhead in rear line easements of each block.

The laying of water pipe, amounting to 47,000 lineal feet, has been completed throughout the "homes for sale" areas and more than 76,000 lineal feet of sanitary sewer pipe will be installed by next spring. Approximately 35 valves, 80 hydrants, and 500 manholes provide controls for this great system of utility services.

Houses

A group of 14 demonstration homes exhibiting different types and methods of construction is now being built so that the public may indicate their choice of the kind of home they want and the price they are willing to pay. At the same time approximately 300 one story "ranch type" homes for which F.H.A. mortgage insurance commitments could be secured, have been started under mass production, onsite methods. It is expected that another 1000 homes will be started during the next 12 months, providing a range of dwelling types and values for the public to choose from.

Good architectural design of dwellings and studied arrangement of setbacks and orientation on large lots will be unusual features.

The typical lot size is 60 feet by 125 feet, with a large percentage being of greater dimensions. Great care has been taken to preserve natural tree growth and the contour of the land on each building site.

Landscape Development

Extensive landscape planning is another distinctive feature of the development program. The planting of native deciduous trees, flowering crabs and hawthorns is now going forward in the completed building areas. More than 7400 trees will supplement the existing growth in the rental areas, and over 8,000,000 square feet of lawn area will

(Continued on Page 31)

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NEW USE FOR SOUND

Measures Water Speed

A new use for sound, to measure the velocity of water, was outlined by W. B. Hess and S. K. Waldorf, senior test engineers, Safe Harbor, Pa., Water and Power Corp., and R. C. Swengel, York, Pa., consultant, before the Middle Eastern District Meeting of the American Institute of Electrical Engineers.

They said their experiments by ultrasonics of a method of determining the velocity, originally devised by Mr. Swengel, appeared applicable to large bodies of water and may lead to applying the method to large scale measurements in the discharge of turbines at hydroelectric plants.

"The ultrasonic method . . . appears to have distinct advantages over existing methods of measuring the discharge of turbines in large hydro-electric stations," their joint technical paper reported . . . "In carrying the method to the present

state of development a great many difficulties have been overcome. It now appears that diligent effort can overcome the remaining obstacles in the way of applying the method to large scale measurements."

The tests were made at the Holtwood Station of the Pennsylvania Water and Power Company, using water flowing from a roof storage tank.

The experiments were made "on a small duct, 5 by 9 inches in cross section, with water velocities up to about six feet per second. The method consisted essentially of calculating water velocity from the measured phase angle between the transmitted ultrasonic signal and the signal received after passing through the body of moving water. The transducers used for the measurement were placed at the opposite walls of the duct and displaced some definite dis-

tance along the principal axis of flow. After progressive improvement in methods and equipment, errors of less than two per cent were obtained in measurements in the test duct.

"It is very desirable that the discharge from the turbine of a hydroelectric unit be measured accurately under various conditions of loading so that the basic data may be obtained which will permit operating the generating station to extract the maximum power from the available water. Further, upon installation of a hydro unit, rating tests frequently are made to determine operating characteristics of the unit under various conditions of loading and whether contract specifications have been fulfilled. With existing methods of measuring turbine discharge, such tests usually require elaborate preparation of equipment and usually can be made only under special conditions which interfere with the normal operation of the plant. The ultrasonic method promises to be simpler for turbine testing," and it appears that this method "will require the installation of only relatively simple testing equipment. . . ."

(Continued from Page 30)

separate the building groups. Each individual home site will be landscaped in accordance with an overall plan of planting. Different streets will become distinctive in character because of the display of certain predominant trees and shrubs. Even street names have been selected to denote the tree growth, and to record names familiar in the language of Indian Tribes once living in this territory.

Industrial Park

The Village could not be a successful economic corporation without providing space for some manufacturing development. The land lying between the Michigan Central Railroad and the E. J. & E.

Belt Line Railroad, being located on the proper side of the Village for prevailing winds, offers an excellent area for a number of selected manufacturing plants arranged in an "Industrial Park." A number of proposals for plant sites have been received by the owners and are now under consideration.

This brief and sketchy story about the conception and development of Park Forest, has of necessity, omitted the names of many individuals who played important parts in producing the project, and has deleted many details of planning and construction which have been important to the job.

The development also represents a program which different branches of the

Federal Housing and Home Finance Agency found sufficiently sound to warrant the loaning of funds, as well as extending mortgage insurance, thereby attracting large sums of mortgage money to support the substantial risk capital provided by American Community Builders.

The construction in its present stage and including that contemplated in the near future will represent an investment of more than \$75,000,000—in a community of permanence and good character. It represents a proper ground for the collaboration of government and private enterprise energies in fashioning a place wherein American families may live in comfort and well being.

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FIELD OR OFFICE ENGINEER C.E. 23. One year detailing, designing, estimating and shop take-off manufacturer pipe hangers and steel fabricating. Three months drafting hydraulic cylinders. Prefers Midwest. \$3800. 672-MW.

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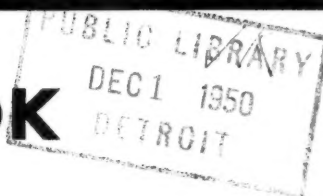
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November, 1950

PART TWO

Vol. 3, No. 3

Message from the President

A review of the activity of Western Society of Engineers during the past fiscal year brings out the unusually high participation of the members in the activity of the Membership Committee's campaign. Mr. L. C. Gabbard, Chairman of this Committee, developed a plan of group leaders who in turn enlisted the entire Society's membership under their respective leadership.

The results spoke for themselves—543 new applications for the year.

The group leaders responsible for this fine performance were:

| | |
|---------------------|------------------|
| Miller, H. | Sawyer, P. |
| Dinsdale, D. A. | Artman, Mrs. M. |
| Sommersfield, H. F. | Garrison, C. K. |
| Elliot, F. E. | Giller, W. C. |
| Smith, O. B. | Mitchell, C. F. |
| Elder, C. H. | Hill, O. A., Jr. |
| Dore, A. J. | Lawson, R. L. |
| Bonham, J. D. | Asmann, E. N. |
| Bryce, W. G. | Bigelow, C. G. |
| Kucho, Jos., Jr. | Kintner, R. C. |
| Morgan, G. A. | Balkin, S. |
| Schlx, W. F. | Lundberg, H. H. |
| McLean, C. J. | Keiser, C. E. |
| Armstrong, E. A. | Wagner, R. |
| Barber, T. C. | Zmeskal, Otto |
| Goodell, F. K. | |

It might be stated that the interest of the engineers in joining the Society reflects their opinion of the value which

this organization holds in their collective thinking. This would be true if the engineers of the community knew of the Society and the work it carries on. Experience has shown that membership applications received are generally in proportion to the number of engineer prospects to whom this information is presented. The fine results from last year's campaign reflect a campaign based on this principle—a large number of members undertook to talk with their acquaintances with the result that a great many more prospects became familiar with the Society than in previous years. The result was a record number of applications.

Each member has a direct interest in obtaining additional members for the Society. It gives him an opportunity for a broader acquaintance among the professional men of the community and strengthens the organization with which he has identified himself.

The Officers and Board of Direction wish to point out this opportunity for service to the Society and fellow members and urge that any member who is willing to assist the Membership Committee get in touch with Mr. P. L. Hedstrom, Chairman for the current year, and offer his services.

H. P. Sedwick

POWER TRANSFORMERS assembled HERE..



30,000 KVA

132 KV

Forced Oil/Forced Air Cooled
Inert Gas Pressure
System

15,000/20,000

KVA

110 KV

Self-cooled/Forced Air Cooled
Oil Expansion Tank

15,000/20,000

KVA

34.5 KV

Self-cooled/Forced Air Cooled
Inert Gas Pressure
System

2500 KVA

69 KV

Self-cooled
Load Ratio Control
Inert Gas-Oil Seal

This section of the Pennsylvania plant is known as the Finishing Department. All Power transformers stop here for final assembly and finishing before going to the Test Department.

The group of transformers pictured is representative of the types of Power transformers designed and manufactured by Pennsylvania.

Transformers in this group range from 2500 Kva to 30,000 Kva. Some are equipped with no load tap

changers; others with underload tap changers.

Many types of cooling methods are represented — self-cooling, forced air cooling, and forced oil cooling.

Methods of oil preservation include Inert Gas-Oil Seal, Oil Expansion Tank, and Inert Gas Pressure Systems.

Other Power transformers regularly built by Pennsylvania have ratings up to 100,000 Kva and voltages up to and including 230 Kv.

Pennsylvania
TRANSFORMER COMPANY

CHICAGO AREA
REPRESENTATIVE

N. M. MINTZ & ASSOCIATES
7357 COTTAGE GROVE AVE., CHICAGO 19
HUdson 3-2717

The Western Society Of Engineers

CONSTITUTION

Adopted May 31, 1922 with Subsequent Amendments
Including Amendment Adopted May 4, 1950

ARTICLE I Name and Location

Sec. 1. The name of this association shall be The Western Society of Engineers.

Sec. 2. The offices of the Society shall be located in the City of Chicago, Illinois.

ARTICLE II Objects

Sec. 1. The objects of this Society shall be the advancement of the theory and practice of engineering, the improvement of the status of engineering practice as a profession, and the maintenance of high professional standards.

ARTICLE III Seal

Sec. 1. The seal of the Society shall be as reproduced herewith.



Sec. 2. All official instruments issued by or under the authority of the Society shall be authenticated by this seal. The Secretary of the Society shall be the custodian of the seal.

ARTICLE IV Policy

Sec. 1. The Society shall neither endorse nor recommend any individual or any scientific or engineering production, except in the interest of the public or the profession. The opinion of the Society may be expressed on such subjects as pertain to the public welfare.

ARTICLE V Membership

Sec. 1. The membership shall be open to persons of good character skilled or interested in engineering.

Sec. 2. The membership shall be divided into grades to be known as Honorary Members, Members, Associate Members, Student Members and Affiliate Members.

Sec. 3. The Honorary Members, Members and Associate Members shall constitute the corporate membership of the Society and have the exclusive right to vote and hold office.

Sec. 4. An Honorary Member shall be a person of acknowledged eminence in engineering, or in a science related thereto, or who has rendered outstanding service to the engineering profession. There shall be no more than fifteen such members at any one time; no more than two may be elected in any one fiscal year.

Sec. 5. A Member, at the time of his admission or advancement to that grade shall:

Be a graduate of an engineering curriculum approved by the Board of Direction of the Society and shall in addition have had not less than four years of increasingly important engineering experience, indicative of growth in engineering competency and achievement and of a character satisfactory to that Board, at least two years of which shall be in responsible charge of engineering work.

Or, if not a graduate, he shall have had equivalent attainments including not less than ten years of increasingly important engineering experience, indicative of growth in engineering competency and achievement and of a character satisfactory to the Board of Direction of the Society, at least two years of which shall be in responsible charge of engineering work.

This grade shall include all Members and Associate Members enrolled at the date of these amendments without payment of additional entrance fees.

Sec. 6. An Associate Member shall, at the time of his admission or advancement to that grade be:

A graduate of an engineering curriculum approved by the Board of Direction of the Society.

Or, if not a graduate, he shall have equivalent attainments, including at least six years of engineering experience of a character satisfactory to the Board of Direction.

He shall transfer to Member grade not later than his 35th birthday.

This grade shall include all persons enrolled as Junior Members on the date of these amendments without payment of additional entrance fees.

Sec. 7. A student Member shall be registered in an undergraduate or a graduate engineer-

ing curriculum approved by the Board of Direction of the Society and shall be pursuing a course of study in preparation for the engineering profession.

He shall transfer to Member or Associate Member grade within one year after termination of student work or his membership in the Society shall terminate.

Sec. 8. An affiliate Member shall be a person not qualified for Member or Associate Member grades, but who is interested in the advancement of engineering, as may be evidenced by an employment which has involved dealing or associating with engineers for a period of at least two years.

Article VI Admissions and Resignations

Sec. 1. All elections to membership shall be made by the Board of Direction. The affirmative vote of a majority of the entire membership of the Board shall be required for election to all grades except Honorary Member. Each candidate elected shall be duly notified of his election, and shall indicate his acceptance of membership by subscription to the Constitution and the payment of entrance fee and dues. If acceptance is not received within sixty days from the date of election, it shall be void unless the time shall be extended by the Board.

Sec. 2. Proposal for Honorary membership shall be submitted in writing by at least fifteen Corporate Members, who shall state their reason for the proposal. Election shall be by ballot, and shall require the affirmative vote of three-fourths of the entire membership of the Board. A person so elected shall be notified promptly by letter. The election shall be void if acceptance is not received within three months after mailing such notice.

Sec. 3. A member may resign by advising the Secretary in writing to that effect. The Secretary shall present such communication to the Board of Direction at its next regular meeting and it shall accept the resignation when all dues are paid.

ARTICLE VII Fees and Dues As Amended May 7, 1948

Sec. 1. The fees and dues for the various grades of membership shall be as follows:

| | Entrance Fee | Annual Dues | |
|---------------------------------|--------------|-------------|--------------|
| | | Resident | Non-Resident |
| Honorary | None | None | None |
| Member | \$20.00 | \$20.00 | \$13.50 |
| Assoc. Member (Age 30-35 years) | 15.00 | 15.00 | 10.00 |
| Assoc. Member (To age 30 years) | 10.00 | 10.00 | 6.50 |
| Affiliate Member | 16.50 | 16.50 | 11.50 |
| Student Member | None | 3.50 | 3.50 |

From each of these annual dues \$2.50 shall be set aside as subscription to the publication of The Western Society of Engineers.

On transfer to a higher grade, the entrance fee previously credited to a member shall be applied against the entrance fee for the new grade.

Sec. 2. A person elected to any grade of membership shall pay dues for the fiscal year in which elected, proportional to the part of the year remaining at the time of election.

Sec. 3. If the dues of any member are not paid before December first, he shall lose the right to vote and to receive the publications of the Society.

CONSTITUTION

The Board of Direction may, by an affirmative vote of a majority of its members, grant extension, or excuse members from payment of dues, or waive the entrance fee if in the best interests of the Society.

Sec. 4. A member shall be liable for the payment of dues until he shall have resigned, been expelled, or relieved from the payment of said dues in accordance with the provisions of this Constitution.

Sec. 5. Corporate and Affiliate Members over sixty years of age shall not be billed for dues after having paid thirty years' dues. Such members shall be known as Life Members, but this designation shall not be construed to establish a separate grade of membership.

Sec. 6. The fiscal year shall commence with the first day of June.

ARTICLE VII Officers

Sec. 1. The officers of the Society shall be a President, a First Vice President, a Second Vice President, a Secretary, a Treasurer and six Trustees.

Sec. 2. A vacancy in any of these offices shall be filled for the unexpired term by the Board of Direction. The appointee so selected shall not be ineligible for election to succeed himself.

ARTICLE IX Management

Sec. 1. The management of the Society shall be vested in a Board of Direction, consisting of the President, the two Vice Presidents, the Treasurer, the six Trustees and the two most recent Past Presidents who continue to be members.

Sec. 2. The Board of Direction shall hold regular meetings at least once every month. A majority of the entire membership of the Board shall constitute a quorum. Special meetings shall be called upon the order of the President, or at the written request of three members of the Board.

Sec. 3. The Board shall supervise the investment and care of the funds of the Society; prescribe the system of accounts; make appropriations for specific purposes; act upon applications for membership as provided in Article VI, Section 1; adopt and revise such By-Laws as may be necessary for the proper conduct of the affairs of the Society and are not inconsistent with this Constitution; appoint such committees as are provided for in the By-Laws; and perform such other acts as are not inconsistent with this Constitution.

ARTICLE X Nomination and Election of Officers

Sec. 1. The President, the Vice Presidents and the Treasurer shall be elected annually and shall hold office for one year and until their successors are elected and qualified. The Trustees shall hold office for three years, two being elected each year.

Sec. 2. The Secretary shall be elected by the Board of Direction at its first regular meeting in each fiscal year or at an adjourned session thereof. An affirmative vote of a majority of the entire Board shall be required for election. He shall hold office for one year or until his successor is elected and qualified.

Sec. 3. Each December the Board of Direction shall elect a Nominating Committee of seven Corporate Members, of whom one, and only one, shall be a member of the Board, and not more than three of whom shall have served on the

Nominating Committee within the previous three years. The appointment of this Committee shall be announced and suggestions for nominees solicited in the next regular issues of the publication of the Society.

Sec. 4. The Nominating Committee shall meet not later than January fifteenth and organize by electing from its membership a Chairman and a Secretary. It shall nominate a President, a First Vice President, a second Vice President, a Treasurer and two Trustees. Before reporting to the Board, the Committee shall secure the acceptance of each nominee.

The Committee shall present its report to the Board of Direction at its regular February meeting. If the Board of Direction shall find any nominee ineligible for the office for which he is nominated, or if any vacancy should occur from any cause, the Board shall select another nominee therefore. The nominations so reported shall be known as the Regular Ticket.

Promptly after the February meeting of the Board of Direction, a copy of the Regular Ticket shall be mailed to every Corporate Member.

Sec. 5. Additional nominations for any office provided for in Sec. 4 of this Article may be made by petition signed by at least twenty Corporate Members. Such petition shall be accompanied by the acceptance of the nomination by each nominee in writing and shall be filed with the Secretary of the Society before the twentieth day of March. Any petition so filed shall be presented to the Board of Direction at its regular March meeting. If the Board shall find any person so nominated ineligible for the office for which he is nominated, the petition as it relates to such nominee shall be rejected. Nominations made in accordance with this section shall be known as a Ticket by Petition.

Sec. 6. Corporate Members who are in arrears in the payment of their dues shall not be eligible for office.

Sec. 7. The President shall not be eligible for re-election.

Sec. 8. On or before the first day of April a letter-ballot shall be sent to each Corporate Member on which shall appear the names of all the candidates to be voted upon, so arranged as to indicate nominees of the Regular Ticket and of the Ticket, or Tickets, by Petition.

Sec. 9. The polls shall close at 12 o'clock noon, the fourth Monday in April. The Secretary shall certify to the competency of the voters and deliver their ballots to three Judges of Election appointed by the Board. These Judges shall canvass the ballots publicly and report the results of the canvass to the Board, which shall, by resolution, declare elected to their respective offices those candidates who have received a plurality of the votes cast. In case of a tie vote between two or more candidates for the same office, the Board shall decide by ballot between the candidates thus tied.

Sec. 10. The officers-elect shall assume their duties on the first day of June.

ARTICLE XI Duties of Officers

Sec. 1. The President shall have general supervision of the affairs of the Society. He shall preside at meetings of the Society, and of the Board of Direction; shall appoint all committees not otherwise provided for, subject to the approval of the Board; and shall be an ex-officio member of all committees. He shall, jointly with the Secretary, sign all contracts and other written obligations of the Society which have been approved by the Board. At the Annual Meetings, he shall report on the general condition of the Society. The Vice Presidents in order of seniority shall preside at meeting and perform the duties

of the President in his absence or in case the office becomes vacant.

Sec. 2. The Treasurer shall receive and deposit all moneys of the Society as designated by the Board of Direction. He shall pay all bills when approved accordance with rules prescribed by the Board. He shall keep regular accounts of all receipts and expenditures in such form as the Board prescribes, which record shall be open at all times to inspection by the Board. He shall give a bond in such amount and with such sureties as the Board may require. He shall make an Annual Report, and such other reports as the Board may require.

Sec. 3. The Secretary shall be the Executive Officer of the Society, subject to the direction of the President and the Board. He shall have charge of the property of the Society, and shall conduct its business, under rules prescribed by the President, sign all contracts and other written obligations approved by the Board. He shall make and preserve a record of all proceedings of the Board. He shall make an Annual Report, and such other reports as the Board may require. He shall give a bond in such amount and with such sureties as the Board may require. The amount of his salary shall be determined annually by the Board at its first regular meeting.

ARTICLE XII Subdivisions

Sec. 1. The Board of Direction may authorize the formation of subdivisions of the Society for the more convenient study and discussion of special fields or functions of engineering, as set forth in the By-Laws.

ARTICLE XIII Meetings

Sec. 1. The Annual Meeting of the Society shall be held on the first Monday in June, at which time the Annual Reports shall be received and other business transacted.

Sec. 2. Other meetings may be called by the President; and shall be called on the request of ten Corporate Members, which request shall state the purpose of the meeting. Not less than one week prior to the date of each such meeting, the Secretary shall mail to each member a notice which shall state the purpose of the meeting; and no other business shall be considered thereat.

Sec. 3. At all meetings of the Society twenty-five Corporate Members shall constitute a quorum.

Sec. 4. Technical and social meetings of the Society and of its subdivisions shall be held at such times and places as may be provided in the By-Laws or approved by the Board.

ARTICLE XIV Discipline

Sec. 1. The Society, through its Board of Direction, shall have the power to investigate and pass upon the conduct of its members alleged to be in violation of the Code of Ethics of the Society or otherwise inimical to the interests of the engineering profession or the Society.

Sec. 2. Upon alleged misconduct of a member coming to the notice of the Board, or upon filing of charges against a member signed by ten or more Corporate Members, the Board shall examine the charges, and if there appears to be sufficient reason for a hearing thereon, shall fix a date for such hearing, and shall, not less than thirty days before said date, notify the accused thereof by registered letter sent to his last known post office address, accompanied by a copy of the charges and a copy of this Article. At the hearing, the accused may hear all charges and all evidence adduced in support thereof, hear and at his option cross-examine any witnesses

BY-LAWS

Adopted May 31, 1922

Including Amendment Adopted January 27, 1949

ARTICLE I

Admission to Membership

Sec. 1. Applications for admission, transfer or reinstatement shall be in such form as the Board of Direction may prescribe. They shall embody a concise statement of the candidate's education and professional experience, with dates and descriptions of work in which he has been engaged.

Sec. 2. Sub-professional Work is to cover the time spent as rodman, chainman, recorder, or draftsman; and also the time spent as instrumentman or inspector when working under direct supervision or on work where the personal responsibility and technical knowledge required are small; that is, minor positions in which the responsibility is slight of a task, set and supervised by a superior, is all that is required. It shall also include time during which he has been occupied in engineering work before he is 21 years old, except as modified by the statement in regard to education of Professional Work. No account is to be taken of work done before the applicant is 16 years old, or of work performed during vacations. In figuring the years of "active practice in engineering work" each year of Sub-professional Work shall be rated as equivalent to one-half year of Professional Work.

Responsible Charge of Work Means

a. In the field, the applicant must have had the direction of work, the successful accomplishment of which rested upon him, where he had to decide questions of methods of execution and suitability of materials, without relying upon advice or instructions from his superior, and of supplying deficiencies in plans or correcting errors in design without first referring them to higher authority for approval, except in cases where such approval is a mere matter of form.

b. In the office, the applicant must have had to undertake investigations, or carry out important assignments, demanding resourcefulness and originality, or to make plans, write specifications and direct the drafting and computations for designs of engineering work, with only rough sketches, general information and field measurements for reference and guidance.

c. In engineering teaching, the applicant must have taught in an engineering school of recognized reputation, and must have had, at least, a grade of assistant professor, or its equivalent.

Design means all that is given above as responsible charge of work in the office, and more. One qualified to design must be able, in the case of any desired piece of engineering, to meet the exigencies of the case, to fulfill the requirements of local circumstances and conditions, and yet not violate any of the canons of engineering. His plan, when executed, must successfully answer the purpose for which it was designed.

Professional Work shall include only the time after the applicant is 21 years old, during which he has been occupied in engineering work of a higher grade and responsibility than that above defined as Sub-professional Work. Time spent in engineering teaching subsequent to graduation shall be listed as professional work.

Sec. 3. An applicant for admission, transfer or reinstatement shall refer to at least three members to whom he is personally known. An applicant for Student grade need refer only to the dean or other authority of the school in which he is enrolled.

Sec. 4. If sufficient information is not received from the requisite number of references, the Secretary shall call on the applicant for additional references. Applicants who may not be personally known to the requisite number of members may be recommended for membership by three members of the Board of Direction after evidence has been secured sufficient, in their opinion, to warrant admission.

Sec. 5. The names of all applicants shall be published with a request for information regarding their qualifications for membership in the Society.

Sec. 6. Any applicant for admission or reinstatement, whose application may have been rejected by the Board of Direction, may make a new application at any time after one year from the date of the rejection of his previous application. Such new application shall be considered in conjunction with the previous application.

ARTICLE II

Fees and Dues

after being sent to the Corporate Members, the ballots shall be canvassed by the Board. A majority of the votes cast shall be required to sustain the action of the Board. The Board shall notify the applicant and the Corporate Members of the result of the canvass of the ballots.

Sec. 4. No disciplinary proceedings of the Society shall be given publicity except as provided in this Article.

ARTICLE XV

Amendments

Sec. 1. Proposed amendments to the Constitution shall be submitted to the Secretary in writing and signed by not less than twenty-five Corporate Members.

The proposed amendments shall be submitted to the Board of Direction at its next regular meeting and referred by it to the Amendments Com-

Sec. 1. Dues shall be payable annually in advance and shall become due on the first day of June of each year.

Sec. 2. Any person whose dues are more than three months in arrears shall be notified of this fact promptly by the Secretary.

Sec. 3. On December 1 of each year the Secretary shall notify all members, whose dues remain unpaid, of the provisions of Article VII, Section 3, of the Constitution. The Secretary shall report on the status of unpaid dues at the April meeting of the Board.

Sec. 4. Any member whose dues remain unpaid shall be reported to the Board at the May meeting, and, unless payment is received or extension is granted, his membership shall terminate at the close of the fiscal year.

ARTICLE III

Duties of

Officers and Committees

As Amended Jan. 27, 1949

Sec. 1. At the first meeting of each new Board, one of the Trustees shall be designated as Assistant Secretary, who shall serve without compensation.

Sec. 2. The Secretary, or in his absence the Assistant Secretary, shall attend all meetings of the Board of Direction. The Secretary or his authorized representative shall attend all meetings of the Society and its Sections.

Sec. 3. The Secretary shall be responsible for the employment and supervision of such staff as may be necessary to carry on the work of the Society, including one or more Assistant Secretaries, providing that the employment of such staff is authorized by the Board of Direction.

Sec. 4. All vouchers or checks drawn against the funds of the Society shall be payable only when signed by the Treasurer or President, and countersigned by the Secretary or Assistant Secretary.

Sec. 5. The Board of Direction may create an Executive Committee, consisting of the President, the Immediate Past President, the Vice Presidents and the Treasurer, which committee shall exercise such authority of the Board as may be delegated to it when the Board is not in session. It shall

mittee, which shall report on them to the Board not later than the following regular meeting of the Board.

Sec. 2. Proposed amendments, unless withdrawn, shall be printed and mailed to all Corporate Members at least fifteen days prior to the meeting of the Society at which they shall be the order of business for discussion; they may be modified in any manner pertinent to the original amendments by a majority vote of the Corporate Members present at such meeting.

Sec. 3. The proposed amendments shall then be voted upon by letter-ballot, which ballot shall be due not later than thirty days after the meeting provided for in Sec. 2 of this Article and shall be counted promptly thereafter. In balloting on proposed amendments to the Constitution, an affirmative vote of two-thirds of all the ballots cast shall be necessary for adoption. Amendments so adopted shall take effect at the next Annual Meeting, unless the amendments are accompanied by a resolution of the Board providing that they shall take effect at an earlier date.

CONSTITUTION

called in support of the charges, produce and examine witnesses in his defense, offer documentary evidence, and make an oral and a written statement in his own behalf. Promptly after the conclusion of the hearing, the Board shall consider the evidence and render its decision. A two-thirds vote of the entire Board shall be necessary to sustain the charges. If they are thus sustained, the Board shall fix the penalty at suspension for a stated period or expulsion, and shall notify the member that the decision becomes effective at the end of one month unless the accused previously enters a written appeal therefrom.

Sec. 3. Appeals shall be submitted to the Corporate Members by letter-ballot in a form to be prescribed by the Board. The ballot shall be accompanied by a statement of the charges, the Board's action thereon, together with such information as is deemed proper, and the defense of the member making the appeal. Twenty days

BY-LAWS

report at each regular meeting of the Board of Direction. The Executive Committee shall not have power to amend the By-Laws, elect or expel members, or fill vacancies on the Board of Direction.

Sec. 6. The Board of Direction shall appoint: A Finance Committee, a Program Committee, a Publications Committee, a Library Committee, and Admissions Committee, an Amendments Committee and a House Committee.

Each of these committees, except the Amendments Committee, shall be composed of not less than three Corporate Members of the Society, at least one of whom shall be a member of the Board. The Amendments Committee shall be composed of five Corporate Members of the Society, three of whom shall be the three latest Past Presidents who continue to be members of the Society. At least one member of the Finance and of the Library Committees and two members of the Program and of the Publications Committees shall have served on the same committees during the previous year. The chairman of the Program Committee shall be an ex-officio member of the Publications Committee and the chairman of the Publications Committee shall be an ex-officio member of the Program Committee.

Sec. 7. The Finance Committee shall have immediate supervision over the financial affairs of the Society and shall report thereon monthly to the Board. It shall certify all bills for payment. It shall appoint a registered public accountant to supervise the accounting and to audit the books of the Society, as of May 31 of each year, which audit shall be included in its report.

The Finance Committee shall submit to the Board of Direction at the regular July meeting in each year a budget of expenses for the current fiscal year. Only routine office expenses shall be incurred in advance of the approval of the budget, except by specific authorization of the Board of Direction.

Sec. 8. The Program Committee shall be responsible for all programs for all meetings of the Society at large, the Sections and the Divisions. It shall commence planning these programs promptly after appointment and not later than the beginning of the third month of the administrative year. The Program Committee shall organize and arrange all programs for meetings of the Society at large. It shall receive the assistance of the Executive Committees of the Sections and the Councils of the Divisions for the purpose of supervising and coordinating all programs for meetings of the Sections and Divisions.

Not later than one month after the close of the administrative year, the committee shall submit its annual report which shall include a complete tabulation of all meetings of the Society, and its Sections and Divisions, together with any recommendations and suggestions which it believes will be of benefit to the Society.

The Committee shall prepare rules, which, when approved by the Board of Direction, shall govern the preparation and presentation of papers.

Sec. 9. The Publications Committee shall supervise the publications of the Society. It shall prepare rules, which when approved by the Board of Direction, shall govern the publications of the Society.

Sec. 10. No paper for presentation or material for publication shall be accepted, which contains information readily found elsewhere, or especially advocates personal interests, or is carelessly prepared, or is foreign to the purposes of the Society.

Sec. 11. The Library Committee shall have gen-

eral supervision over the library, the relations between The Western Society of Engineers and the John Crerar Library as established under the contract between the two organizations, and the library services established between the Society and the John Crerar Library.

Sec. 12. The Admissions Committee shall investigate all applications for membership and report thereon to the Board of Direction.

Sec. 13. The Amendments Committee shall consider and make a report to the Board on all proposed amendments to the Constitution referred to it in accordance with Article XV, Sec. 1, of the Constitution. It shall also give consideration to formulation and/or revisions of the By-Laws and/or Rules which it considers desirable, or which are referred to it, and shall report to the Board thereon.

Sec. 14. The House Committee shall have general supervision of the rooms in the Society's headquarters and property therein.

ARTICLE IV Subdivisions

(Sections, Divisions and Branches)

Sec. 1. A section shall consist of members of the Society interested in the more intimate study and discussion of a particular field of engineering. A section may be formed upon the written application to the Board of five per cent or more of the membership of the Society if in the opinion of the Board, it is in the interest of the Society as a whole.

Sec. 2. A division shall consist of members of the Society whose professional interests are of the same general character but not restricted to any particular field of engineering. A division may be formed upon the written request of forty or more members of the Society if in the opinion of the Board, it is in the interest of the Society as a whole.

Sec. 3. The Board of Direction may at its discretion abolish a section or division if more than three months elapse from the date of authorization of such section or division before it is in active operation, or if at any time its membership falls below the number required for authorization, or for other satisfactory reasons; but this action shall be taken only after a resolution to abolish such section or division shall have been introduced at a regular meeting of the Board and laid over until a subsequent meeting, at which latter meeting the affirmative vote of two-thirds of the entire membership of the Board, obtained by letter-ballot if necessary, shall be required.

Sec. 4. A branch shall consist of members of the faculty, other instructing staff, and students enrolled in an engineering course in a college of recognized standing.

Sec. 5. The organization, management and operation of sections, divisions and branches shall be in accordance with rules approved by the Board of Direction.

ARTICLE V Meetings As Amended Jan. 29, 1948

Sec. 1. Meetings of the Society and of its subdivisions, for the presentation and discussion of papers, or for social purposes, shall be held as authorized by the Board of Direction, and

shall be open to the public except as may be ordered by the Board.

Sec. 2. Regular meetings of the Board of Direction shall be held during the fourth week of each month on call from the President.

The minutes of Board meetings shall be transcribed and sent promptly to each member of the Board.

ARTICLE VI Miscellaneous

Sec. 1. The Board may formulate rules, conforming with the Constitution and By-Laws, relating to any affairs of the Society. Such rules may be adopted at any regular meeting of the Board by the affirmative vote of a majority of the entire membership of the Board and shall take effect on adoption.

Sec. 2. In all questions involving parliamentary rules, not covered in the Constitution and By-Laws, Robert's Rules of Order shall govern.

Sec. 3. Any member who has complied with the provisions of the Constitution shall be entitled to a diploma certifying his grade of membership. It shall be signed by the President, attested by the Secretary, and bear the seal of the Society.

Sec. 4. The Society may issue badges to its members. The badges shall be of a design approved by the Board, shall bear distinguishing marks for the different grades and may have members' names and dates of membership engraved thereon. Prices of badges shall be fixed by the Board.

Sec. 5. Diplomas and badges shall be issued only on agreement providing for their return on demand of the Board in case of termination of membership.

Sec. 6. It shall be the duty of all members to call the attention of the Secretary to the improper use of the Society badge or symbols, or to claims made by nonmembers that they are members of the Society. The Secretary shall make an investigation and present the facts to the Board.

Sec. 7. The official record of the Society shall be known as the Midwest Engineer of The Western Society of Engineers. It shall be published under the direction of the Publication Committee; shall contain technical papers and discussion, and may include the Constitution, By-Laws, Rules of the Board, annual reports, the membership directory, and such other information as the Board may prescribe.

Sec. 8. The administrative year of all committees, officers of Sections and Divisions and all commissions created by the Society shall coincide with the administrative year of the Society as provided in Article X, Section 10 of the Constitution.

ARTICLE VII Amendments

Sec. 1. Any proposed amendment to these By-Laws shall be presented in writing at a regular meeting of the Board, and shall be voted up at the next regular meeting. The Secretary shall mail a copy to each member of the Board at least fifteen days before the meeting at which action on such amendment is to be taken. An affirmative vote of two-thirds of the entire membership of the Board, obtained by letter-ballot if necessary, shall be required for adoption.

HONOR AWARDS

Charles Ellet Award

The Society administers or participates in four honor awards having as their purpose the recognition of engineering accomplishment and an incentive to engineers and members of the Society to excel in preparing and presenting engineering papers. These awards are the Octave Chanute Medal established in 1901, the Washington Award in 1916, the Charles Ellet Award (for Junior Engineers) in 1929 and the Alfred Noble Prize also in 1929. A brief outline of the purpose and conditions of each of these awards together with a list of the respective recipients follows:

This award was established in 1929 by a gift from E. C. Shuman, a Junior member, who suggested the name "Charles Ellet Award" as a memorial to that young engineer of Civil War days whose undaunted determination to succeed in the face of overwhelming disappointments outlived the struggle for recognition.

The award is symbolized by a beautiful loving cup on which is engraved, the name of the recipient and the names of their schools. The cup is on display in the Society's headquarters. As evidence of the honor bestowed, the winner receives an engraved certificate and a prize of \$25.

The award is made periodically to a member under 30 years old, who, in the opinion of a committee of awards, is adjudged to have excel-

led in the preparation and presentation of a technical paper presented in competition for this award at a meeting of the Junior Engineers.

The recipients of this honor have been:

- 1930—John D. Burlie—Purdue University.
- 1932—Francis E. Wolosewick—Armour '27.
- 1933—Joseph Kucho.
- 1934—Irving J. Kadie—Chicago Tech. '27.
- 1935—Grover C. Lewis—Illinois '30.
- 1936—Robert W. Suman—Armour '34.
- 1937—George A. Nelson—Armour '35.
- 1939—Raymond V. McGrath—Univ. of Washington '35.
- 1940—Ray F. Erickson.
- 1950—Donald R. Klusman.

Washington Award

The late John W. Alvord, Past President W. S. E., in 1916 proposed the establishment of an honor award by the Society and donated a fund for its maintenance. The scope of the award was later enlarged and the name "Washington Award" adopted as a reminder that the first president was an engineer. The four "founder" engineering societies were invited to elect two representatives each to serve on the Commission of Award which also includes nine members to be selected by the Western Society of Engineers.

The purpose of the Award is the "recognition of devoted, unselfish and pre-eminent service in advancing human progress." It is conferred each year upon an engineer whose professional attainments, in the judgment of the commission, have pre-eminently advanced the welfare of mankind. Presentation of the award is made at a joint meeting of the members of the five participating societies.

The token of the Washington Award is a beautiful bronze tablet mounted on a marble base and bearing an inscription reciting the purpose of the award, name of the recipient, the accomplishment for which it is given followed by the names of the participating societies.

Subsequent gifts by Mr. Alvord have increased the endowment to a substantial amount, enabling the award to be administered in a dignified manner. The Commission has adopted complete rules governing selection of candidates for the award and procedure in choosing the recipient. The names of the recipients and citations of the Award follow:

- 1919—Herbert C. Hoover, Hon. M. W. S. E., for his achievements as chairman, commission for relief of Belgium 1914-17, food administrator of the United States 1917-18.
- 1922—Robert W. Hunt, Hon. M. W. S. E., for his pioneer work in the development of the steel industry in the United States and for a life devoted to the advancement of the engineering profession.
- 1924—Arthur N. Talbot, Hon. M. W. S. E. for his life work as student and teacher, investigator and writer and for his enduring contribution to the science of engineering.
- 1925—Jonas Waldo Smith, for the rare combination of vision, technical skill, administrative ability and courageous leadership in engineering.

- 1926—John Watson Alvord, Past Pres. and Hon. M. W. S. E., for his pioneer work in developing the fundamental principles of public utility valuation and his marked contributions to sanitary science.

- 1927—Orville Wright, for fundamental scientific research and resultant successful airplane flight.

- 1928—Michael Idvorsky Pupin, for devotion to scientific research leading to his inventions which have materially aided the development of long distance telephone and radio broadcasting.

- 1929—Bion Joseph Arnold, Past President and Hon. M. W. S. E., for pioneering work in the engineering and economics of electrical transportation.

- 1930—Mortimer Elwyn Cooley, for vision and constructive leadership in the education of the engineer.

- 1931—Ralph Modjeski, Past President and Hon. M. W. S. E., for his contribution to transportation through superior skill and courage in bridge design and construction.

- 1932—William David Coolidge, for his scientific spirit and achievement in developing ductile tungsten and the modern x-ray tube.

- 1935—Ambrose Swasey, for his distinguished contributions as a builder of instruments, institutions and men.

- 1936—Charles Franklin Kettering, for his high achievements in guiding industrial research toward the greater comfort, happiness and safety of mankind in the home and on the highway.

- 1937—Frederick Gardner Cottrell, for his social vision in dedicating to the perpetuation of research the rewards of his achievements in science and engineering.

- 1938—Frank Baldwin Jewett, for inspiring and directing scientific research leading to improvements in the art of communication.

- 1939—Daniel Webster Mead, Hon. M. W. S. E., for his superior contribution to sound theory, good practice and high ethical standards in the creation of engineering works, as an engineer and as a teacher.

- 1940—Daniel Cowan Jackling, M. W. S. E., for pioneering in large-scale mining and treatment of low-grade copper ores, releasing vast resources from formerly worthless deposits.

- 1941—Ralph Budd, M. W. S. E., for vision and courageous leadership in advancing the technological frontiers of high speed railroad transportation.

- 1942—William Lamont Abbott, Past President and Honorary M. W. S. E., for advancing the standards of the engineering profession, for aiding combustion research.

- 1943—Andrey Abraham Potter, for distinguished leadership in engineering education and research and patriotic service in mobilizing technical knowledge for victory in war and peace.

- 1944—Henry Ford, for pioneer development of mass production of low cost automotive transportation which revolutionized the way of life of mankind.

- 1945—Arthur Holly Compton, Hon. M. W. S. E., for his research and teaching in the physical sciences, increasing man's knowledge of the action of x-rays and cosmic rays.

- 1946—Vannevar Bush, for outstanding leadership in organizing and directing scientific resources of the nation toward victory in World War II.

- 1947—Karl Taylor Compton, for progressive administration of engineering education for leadership in research and for advancement of American industry in technology.

- 1948—Ralph Edward Flanders, for high technical skill in perfecting the tools of industry and for distinguished service in the field of human relationships.

- 1949—John Lucian Savage, for unselfish public service devoted to the creation of monumental hydraulic structures utilizing natural resources.

- 1950—Wilfred Sykes, for invention of electrical machines and steel processes for advances in industrial administration and cooperation for counsel to state and college.

Alfred Noble Prize

The Alfred Noble Prize was established in 1929 and consists of an award from the income of a fund contributed by engineers and others to perpetuate the name and accomplishments of Alfred Noble, Past President of both the Western Society of Engineers and the American Society of Civil Engineers. The prize consists of a cash award, allowance for travel expense and a certificate signed by the president and secretary of the American Society of Civil Engineers, which society is trustee of the fund.

The award is open to any member, not past his thirty-first birthday, of the Western Society or any of the four "founder" engineering societies and is given for a technical paper of particular merit on any subject accepted for publication by any of the foregoing five societies.

The recipient of the prize is selected annually by a committee composed of one representative from each of the five societies. The award is made at a general meeting of the society of which the recipient is a member.

The Alfred Noble Prize has been awarded as follows:

- 1931—C. T. Eddy (A. I. M. E.), for paper, "Arsenic Elimination in the Reverberatory Refining of Native Copper."
- 1932—Frank M. Starr (A. I. E. E.), for paper "Equivalent Circuits."
- 1933—Claude Maxwell Stanley, Jr. (A. S. C. E.), for paper "Study of Stilling—Basin Design."
- 1936—Abe Tilles (A. I. E. E.), for paper "Spark Lag of the Sphere Gap."
- 1937—G. M. L. Sommerman (A. I. E. E.), for Paper "Properties of Saturants for Paper-Insulated Cables."
- 1938—Ralph J. Schilthuis (A. I. M. E.), for paper "Connate Water in Oil and Gas Sands."
- 1939—Claude E. Shannon (A. I. E. E.) for paper "A Symbolic Analysis of Relay and Switching Circuits."
- 1941—Robert F. Hayes, Jr. (A. I. E. E.), for paper "Development of the Glow Switch."
- 1942—George W. Dunlap (A. I. E. E.), for paper "The Recovery Voltage Analyzer for Determination of Circuit Recovery Characteristics."
- 1943—Dr. Benjamin J. Lazan (A. S. M. E.), for paper "Some Mechanical Properties of Plastics and Metals Under Sustained Vibrations."
- 1944—W. R. Wilson (A. I. E. E.), for paper "Corona in Aircraft Electric Systems as a Function of Altitude."
- 1945—A. L. Ahlf (A. S. C. E.) for paper "Design Constants for Beams with Nonsymmetrical Straight Haunches."
- 1946—Martin Goland (Jr. A. S. M. E.), for paper "The Flutter of a Uniform Cantilever Wing."

Octave Chanute Medal

Octave Chanute, during his term of office as president, presented the Society with a fund to provide medals as awards for the best papers in Civil, Mechanical and Electrical engineering presented before the Society during 1901. At the close of his administration in 1902, he donated a much larger fund the revenue therefrom to be applied in awards for prizes for papers read before the Society, under such conditions as the Board of Direction might determine.

During the following years medals have been awarded in General, Civil, Mechanical and Electrical engineering. The present design of the medal was adopted in 1913 and each medal bears the profile of Mr. Chanute on one side and on the obverse side the year of the award, the name of the recipient, the branch of engineering and the date on which the paper was presented.

The awards of the Chanute medal have been made as follows:

- 1901
 - W. D. Pence—Civil Engineering
 - J. H. Spangler—Civil Engineering
 - A. Bement—Mechanical Engineering
 - A. V. Abbott—Electrical Engineering
- 1902
 - J. W. Alvord—Civil Engineering
 - R. E. Milligan—Mechanical Engineering
 - E. B. Ellicott—Electrical Engineering
- 1903
 - A. Marston—Civil Engineering
 - Storm Bull—Mechanical Engineering
 - E. Goenzenbach—Electrical Engineering
- 1904
 - W. A. Shaw—Civil Engineering
 - A. Bement—Mechanical Engineering
- 1905
 - T. L. Condon—Civil Engineering
 - C. E. Sargent—Mechanical Engineering
 - C. H. Smoot—Electrical Engineering
- 1906
 - G. H. Bremner—Civil Engineering
 - W. L. Abbott—Mechanical Engineering
 - R. F. Schuchardt—Electrical Engineering
- 1907
 - F. E. Turneure—Civil Engineering
 - W. T. Ray and Henry Kreisinger—Mechanical Engineering
 - D. W. Roper—Electrical Engineering
- 1908
 - H. E. Horton—Civil Engineering
 - A. N. Talbot—Mechanical Engineering
 - Morgan Brooks—Electrical Engineering
- 1909
 - A. Bement—Civil Engineering
 - O. Chanute—Mechanical Engineering
 - R. H. Rice—Electrical Engineering
- 1910
 - C. K. Mohler—Civil Engineering
 - C. P. Berg—Mechanical Engineering
 - H. B. Gear—Electrical Engineering
- 1911
 - John Ericson—Civil Engineering
 - H. Gansslen—Mechanical Engineering
 - C. F. Burgess—Electrical Engineering
- 1912
 - Onward Bates—General Engineering
 - D. W. Mead—Civil Engineering
 - W. L. Abbott—Mechanical and Electrical Engineering
- 1913
 - O. H. Basquin—Civil Engineering
 - T. V. Salt—Mechanical Engineering
- 1914
 - Andrews Allen—General Engineering
 - Norman Stineman—Civil Engineering
 - Hymen Eli Goldberg—Mechanical Engineering
- 1915
 - Curtis McD. Townsend—General Engineering
 - Wilbur M. Wilson—Civil Engineering
- 1916
 - H. B. Sauerman—General Engineering
 - Clinton B. Stewart—Civil Engineering
- 1917
 - B. H. Peck—Electrical Engineering
- 1924
 - W. A. Shaw—General Engineering
 - John F. Hayford—Civil Engineering
 - Paul L. Battey—Mechanical Engineering
- 1935-37
 - W. M. Wilson—Civil Engineering
 - F. F. Fowle—Electrical Engineering
- 1937-38
 - Otto R. Jelinek—Civil Engineering
 - Earle G. Benson—Mechanical Engineering
 - J. Paul Clayton—Electrical Engineering
- 1938-39
 - Chas. B. Burdick—Civil Engineering
 - A. G. Shaver—Electrical Engineering
- 1939-40
 - Paul L. Battey—Civil Engineering
 - Gustav Egloff—Mechanical Engineering
- 1940-41
 - Lawrence T. Wyly—Civil Engineering
 - Charles W. Gennet, Jr.—Electrical Engineering
- 1941-42
 - Sholto M. Spears—Civil Engineering
 - Charles W. Lerch—Electrical Engineering
- 1942-43
 - John B. Jackson—Electrical Engineering
- 1943-44
 - Robert L. Anderson—Civil Engineering
 - Frank F. Fowle—Mechanical Engineering
- 1944-45
 - Ovid W. Eshbach—General Engineering
- 1945-46
 - George C. Hillis—Communication Engineering
- 1946-47
 - Tenney S. Ford—Sanitary Engineering
 - Albert L. Tholin—Sanitary Engineering
- 1947-48
 - Daniel V. Meiller—Mechanical Engineering
- 1947—John H. Hollomon (A. I. M. E.), for paper "The Mechanical Equation of State."
- 1948—Robert L. Hess (A. I. M. E.), for paper "Calculated Effect of Pressure Maintenance on Oil Recovery."
- 1949—John C. Fisher (A. S. M. E.), for "Anisotropic Plastic Flow."

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Industries have Room to Grow



"The lofty oak from a small acorn grows"

Lofty oaks can't grow from little acorns without room for deep roots and spreading branches. And room to grow is as essential to industry as it is to mighty oaks.

Here in an area of 11,000 square miles, Chicago and Northern Illinois, there is a multitude of desirable plant sites all within easy access to the greatest industrial center of the United States, and yet all offer that advantage which is so essential in these days of industrial expansion—*decentralization and room to grow*.

Add to this the tremendous facilities in Chicago and Northern Illinois for transportation, marketing, research, education, culture and good living and you

have a combination of industrial advantages unequalled elsewhere in the world.

Whether the requirements of your business are those of a characteristically compact industrial area or those to be found in smaller but easily accessible cities beyond, the Chicago and Northern Illinois area offers the wide diversity to include the type of space you need.

A LETTER TO US... describing your requirements will bring you a careful analysis of this area's advantages as they apply to your business. Or, if you wish, we will send you a carefully screened list of the available buildings or sites that would be suitable for your operations, based on the information you give us. We keep all such inquiries confidential. Just write us.

Industries in the Chicago Area have these outstanding advantages: Railroad Center of the United States • World Airport • Inland Waterways • Geographical Center of U. S. Population • Great Financial Center • The "Great Central Market" • Food Producing and Processing Center • Leader in Iron and Steel Manufacturing • Good Labor Relations Record • More Than 2,600,000 Kilowatts of Power • Tremendous Coal Reserves • Good Government • Good Living • Good Services for Local Tax Dollars.

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Mr. Sedwick, now Vice-President of the Public Service Company of Northern Illinois, has been associated with that company for 37 years. He served in a variety of engineering and operating capacities from 1913 to 1941 when he was appointed Vice-President.

H. P. Sedwick joined The Western Society of Engineers in 1923. He served as a member of the Executive Committee of the Gas, Fuels and Combustion Engineering Section, was Chairman of the Management Committee, and Chairman of the Development Committee. He was elected to the Board of Direction as Trustee, 1945-47, Second Vice-President, 1948-49, First Vice-President, 1949-50.



DONALD N. BECKER First Vice-President

Donald N. Becker is Chief Structural Engineer with A. J. Boynton and Co., and before that was Engineer of Bridge Design for the City of Chicago for 24 years. He graduated from Rensselaer Polytechnic Institute with the degree of Civil Engineer.

Mr. Becker joined WSE in 1920 and has served as a Director and Chairman of the Bridge and Structural Engineering section. He has been Chairman of the Attendance and Admissions committees, and has served on the Library, Fellowship and Civic committees. He is now sponsor of the Junior Division. He served as a Trustee and Treasurer.



OFFICERS

19

JOHN F. SULLIVAN, JR.
Treasurer

John F. Sullivan, Jr., is an assistant to vice-president, in charge of service and construction, Commonwealth Edison Co. After receiving his engineering degree from the University of Wisconsin, Mr. Sullivan worked with General Electric Co., and then joined the Edison company in 1925.

Mr. Sullivan joined The Western Society of Engineers in 1928. He is past president of the Illinois Engineering Council and a member of the American Society of Mechanical Engineers. Mr. Sullivan has been and is now a member of the Mechanical section of WSE.



J. EARL HARRINGTON
Executive Secretary

Mr. Harrington was graduated from Illinois Institute of Technology with a B. S. degree in Chemical Engineering. In 1939 he received the professional degree of Chemical Engineer from the same school. He was engaged for 12 years as chemical engineer for the Bureau of Engineering, City of Chicago. During World War II he was consultant and engineering coordinator for the Quartermaster General and later served as Chief of the High Explosives Manufacturing and Raw Materials Divisions of the Explosives Branch of the Ordnance Department.

Mr. Harrington joined the Western Society of Engineers in 1937 and was a director and chairman of the Chemical and Metallurgical Section.



OVID W. ESHBACH
Second Vice-President

Ovid W. Eshbach has been dean of Northwestern University's Technological Institute since 1939. After receiving his Bachelor's and Master's degrees from Lehigh, Brooklyn Polytech and M.I.T., he served as engineer and personnel advisor for Pennsylvania Bell Telephone and A. T. & T. in New York. He is the editor of "Handbook of Engineering Fundamentals."

Dean Eshbach has served on the Education Washington Awards, and Development committees. He has been a representative on the Engineering Societies Personnel Service Advisory Committee and for two years chairman of this group.



1950-51

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(Continued from Page 12)

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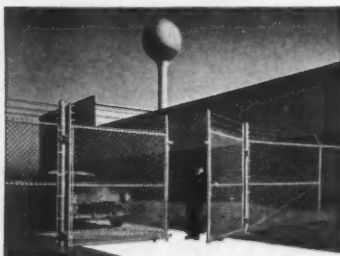
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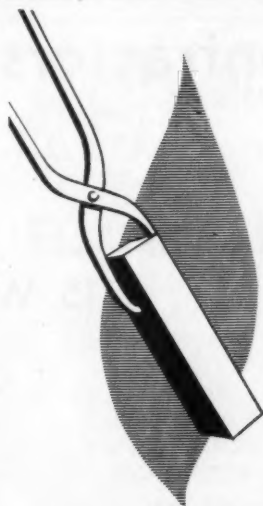
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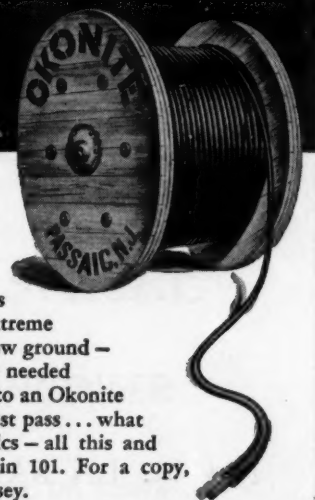
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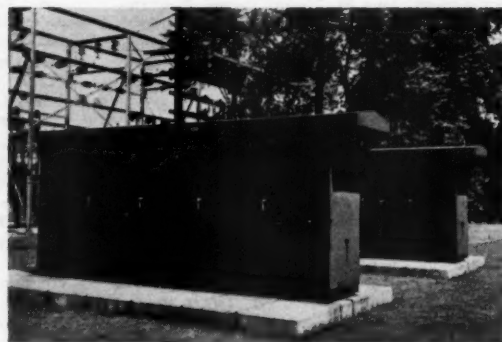
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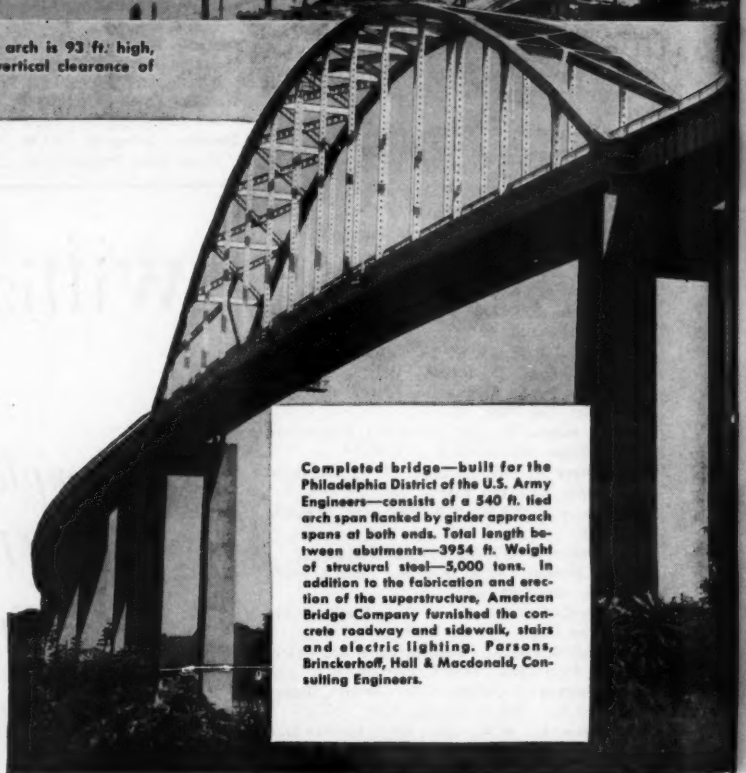
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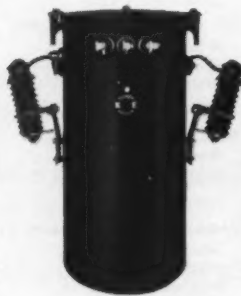
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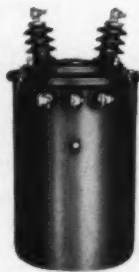
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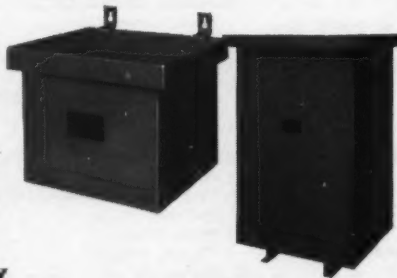
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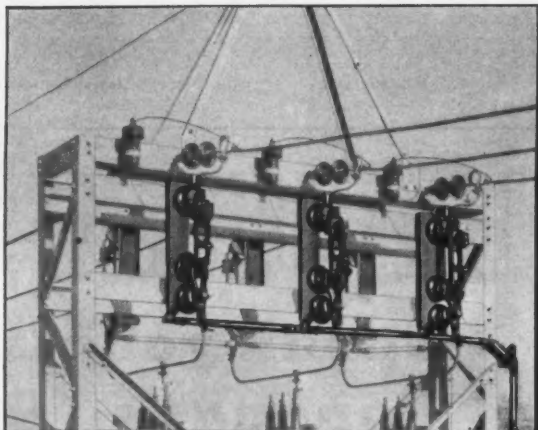
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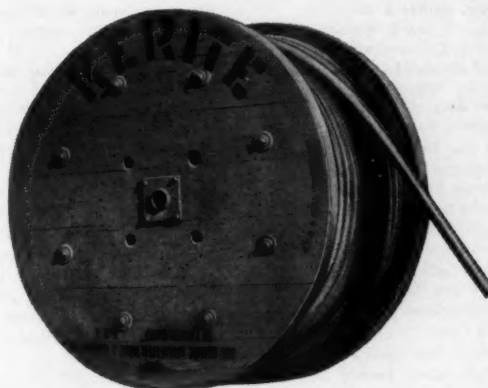
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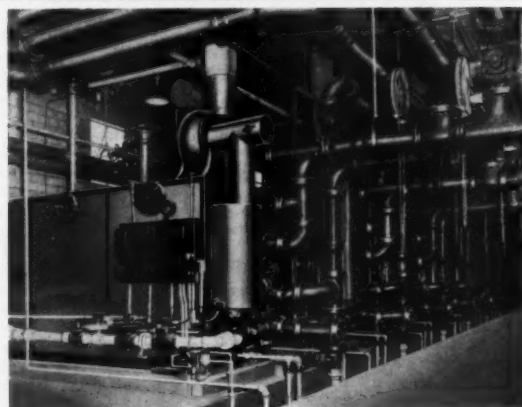
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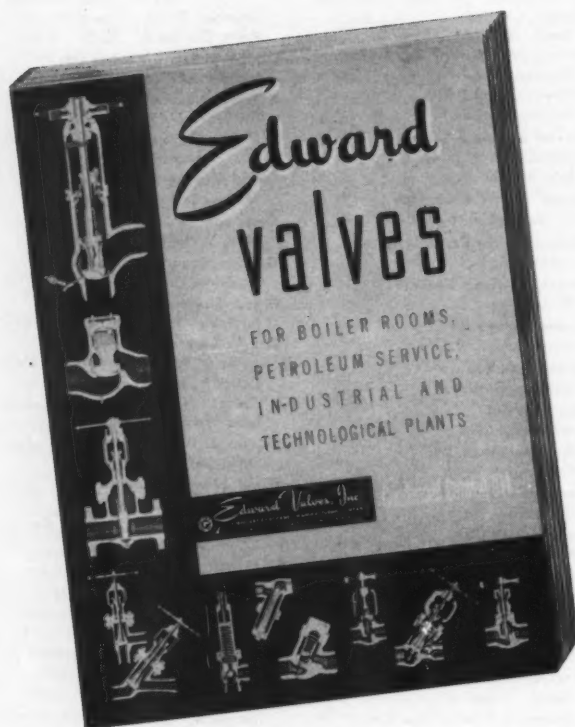
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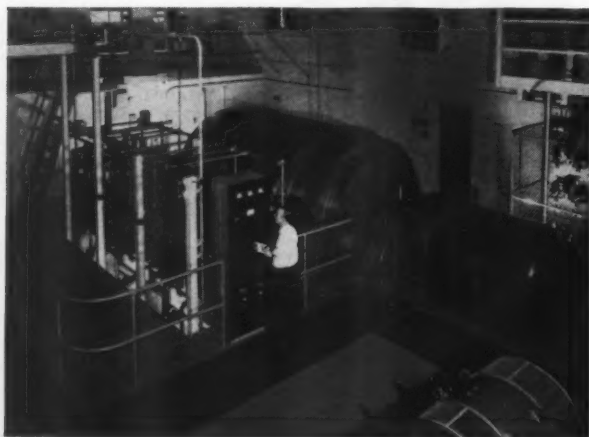
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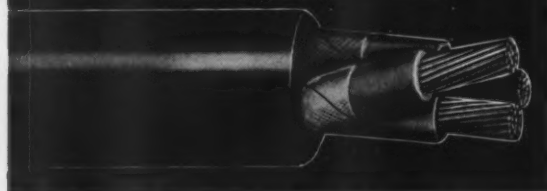
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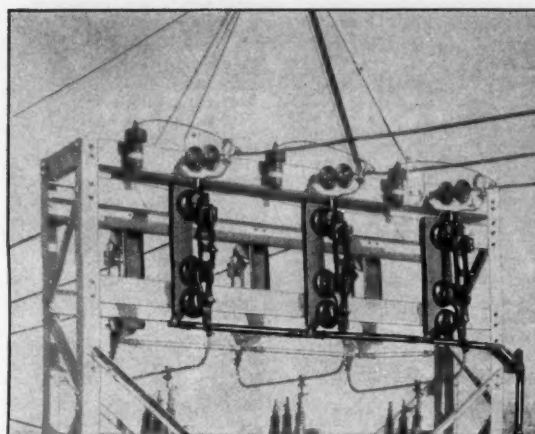
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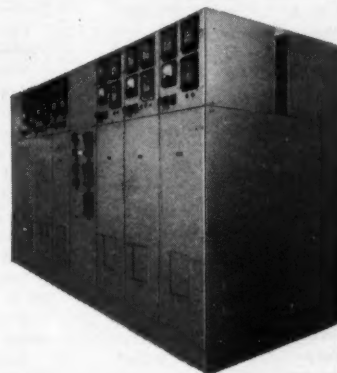
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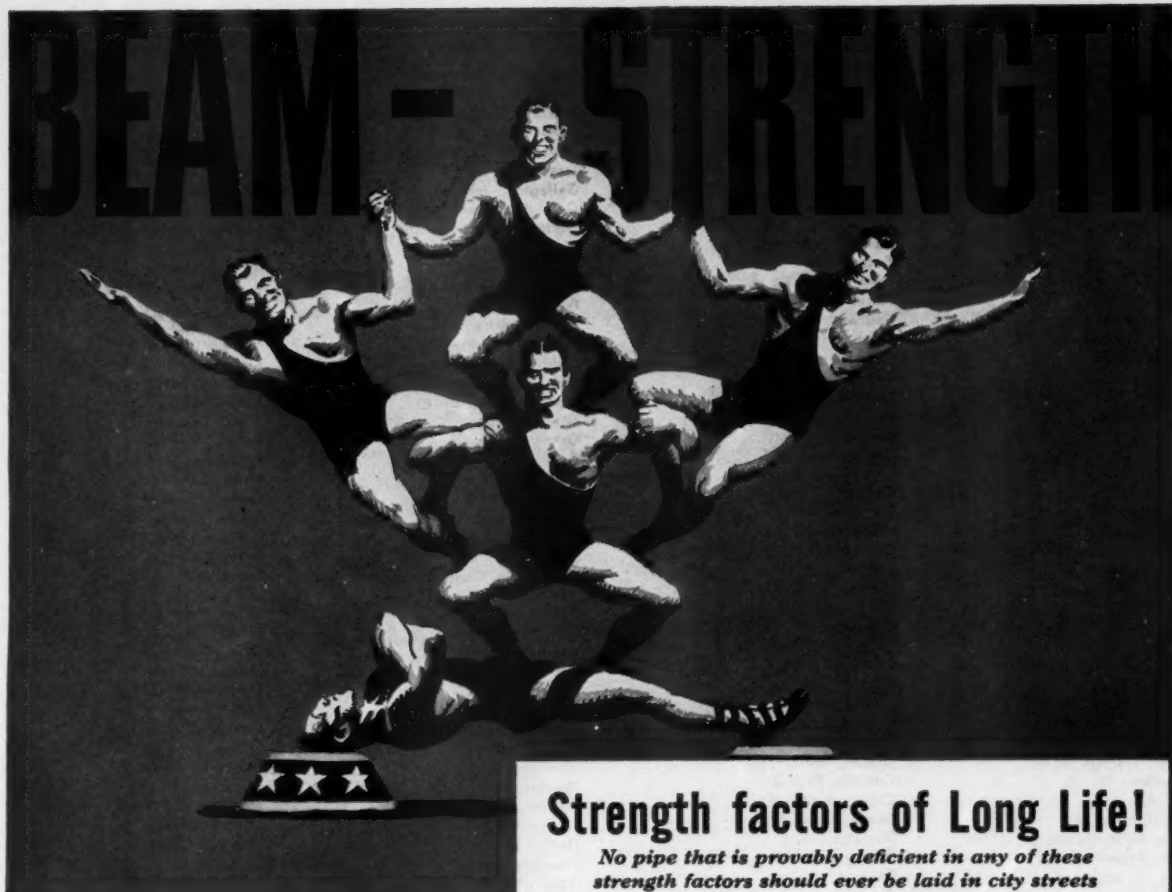
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Strength factors of Long Life!

No pipe that is provably deficient in any of these strength factors should ever be laid in city streets

Without beam strength—or, for that matter—without all of the strength factors listed opposite—no pipe laid 100 years ago in city streets would be in service today. But, in spite of the evolution of traffic from horse-drawn vehicles to heavy trucks and buses—and today's vast complexity of subway and underground utility services—cast iron gas and water mains, laid over a century ago, are serving in the streets of more than 30 cities in the United States and Canada. Such service records prove that cast iron pipe combines all the strength factors of long life with ample margins of safety. No pipe that is provably deficient in any of these strength factors should ever be laid in city streets. Cast Iron Pipe Research Association, Thos. F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3.



BEAM STRENGTH

When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

CRUSHING STRENGTH

The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

SHOCK STRENGTH

The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times on the same spot from progressively increased heights of 6 inches.

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

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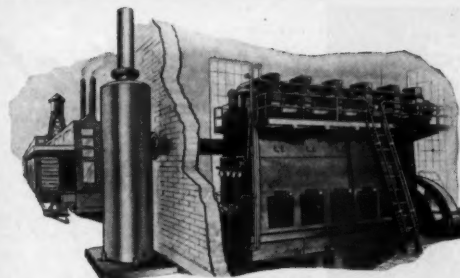


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Scott, John V.
Sherman, LeRoy K.
Showtis, Bruno M.
Snook, Wilbur L.
Stanton, Kenneth J.
Strauss, Raymond O.
Strait, Edward N.
Sutherland, William L.
Tingley, Egbert M.
Traiser, L. M.
Wahlin, Fred W.
- Orland Park**
Loebe, Roy A.
- Palatine**
Boome, Alexander, Jr.
Carlson, Warren W.
Heller, W. D.
Sipp, Thurman L.
- Palos Heights**
Clark, Max L.
Preston, Edward C.
Itzel, Werner F.
- Park Ridge**
Anda, L. S.
Barbieri, Joseph F., Jr.
Brinker, Robert W.
Brookens, Dwight M.
Bryce, William G.
Carlson, Silas
Dehlquist, Philip L.
Dopp, Carl A.
Enander, E. H.
Enander, John O.
Gates, L. Dean
Giller, Clyde E.
Giller, William C.
Guthrie, Robert M.
Hand, Geo. W.
Hennes, Charles F.
Heuer, Joseph H.
Jenks, Clarence A.
Massa, Edwin T.
Normann, Carl
Peterson, Burdette
Przywiecki, Theodore I.
- Smith, Edward R.
Stedman, Elmore W.
- Pekin**
Bentz, George W.
- Peoria**
Frost, Oscar
Harman, Jacob A.
Wallace, Dwain M.
Wendell, Everett J.
- Prospect Heights**
Adam, George H.
McKee, Frank J.
Nelson, Arthur E.
- Quincy**
Gerdes, William
- River Forest**
Baldwin, Edward T.
Brizzolara, Chas. A.
Carlson, Martin F.
Chinlund, Daniel
Houser, Arthur M., Jr.
Jensen, Otto D.
Pen Dell, C. W.
Pohl, H. E.
Saxer, Harold A.
Werlich, J. F.
Wiegman, Harold H.
- River Grove**
DeWolfe, E. C.
Johnson, Raymond D.
- Riverside**
Anderson, Hjalmar A.
Bangs, E. H.
Doering, Heinz G.
Kreml, Frank
Wolff, Edward J.
- Rockford**
Egeland, R.
- Round Lake**
Field, Jack L.
- Sandwich**
Cenfield, F. H.
- Shelbyville**
Kibort, Francis
- Skokie**
Baker, J. S.
Clynes, Dennis J.
Grubb, Robert D.
Hedges, H. M.
Lange, Robert N.
Leaming, Earl K.
Peterson, Robert C.
Rian, L. Nordlow
Wade, J. William
- Springfield**
Jenkins, Carter
Lanphier, Robert C., Jr.
Logan, Howard
Lundgren, Victor
Macklin, Charles
Nankivil, R. M.
Polk, Wesley W.
- Spring Grove**
Belbes, George J.
- Streator**
Severson, Norman
- Sycamore**
Slezak, John
- Urbana**
Carlson, Gordon V.
Draffin, Jasper O.
Eklaw, George E.
Huntington, W. C.
Leighton, M. M.
Paine, Ellery B.
Richart, Frank E.
Voskuil, Walter H.
Wilson, W. M.
- Villa Park**
Blinzler, Glenn F.
Eddy, Harold T.
McElroy, Claud E.
Poole, F. M.
- Viola**
Terrey, William H.
- Waukegan**
Banta, J. S.
Elsberg, George W.
Genkinger, Herman N.
Sevin, Eugene
- Westchester**
Toreky, Zoltan G.
- West Chicago**
Burns, James J.
- Western Springs**
Bergman, H. W.
Flinn, Walter H., Jr.
Futrell, William D.
Haefner, John G.
Hartsell, Theodore D.
Herr, Clarence C.
Holt, Newton O.
Koch, Edward C.
McKnight, Dana I.
Nessel, Chas. M.
Read, Roy P.
Ryba, Stanley J.
Schorlemer, Harold J.
Snyder, Robert A.
Turner, Ralph E.
Wade, Irving L.
- Westmont**
Lamb, Carter H.
- Wheaton**
Ashley, Clifford A.
Carlson, Ernest A.
Cosley, H. H.
Dolgos, Jos. J.
Elfstrom, P. R.
Flint, Arthur N.
Graf, William, Jr.
Hoffer, W. E.
Kunze, Edward J.
Markle, M. G.
Otto, Harold W.
Putman, Byron E.
Riihimaa, William A.
St. Pierre, Lowell C.
Schewe, Louis C.
Smith, Gilbert M.
Smith, Monroe A.
Sommerfield, Sumner S.
Stickney, G. W.
Stott, Louis H.
Webster, Arthur L.
Whitton, A. William
- Wilmette**
Anderson, James S.
Behnke, Wallace B., Jr.
Benson, Edward
Born, Paul L.
Campbell, Richard B.
Cox, Robert D.
Davies, Frank C.
Findlater, William E.
Fritch, Louis C.
Gunther, Gustav A.
Kuhles, Edward K.
LeBailly, Andrew R.
Lempke, Watler J., Jr.
Randall, Frank A., Jr.
Reichmann, Albert
Reynolds, I. L.
Rice, Ralph H.
Riepe, Gerald E.
Schaub, J. Benton
Shaw, Walter A.
Smith, Earl J.
Tideman, S. N.
Truska, William M., Jr.
Wade, Reginald N.
Wicks, C. H.
Ziolkowski, C. S.
- Wilmington**
Danielson, F. D.
- Winnetka**
Adams, Luther
Anderson, Robert L.
Clayton, J. Paul
Haugland, Sigurd
Kurtz, W. O.
Miller, Charles R.
Riley, Maynard H.
Rockwell, Matthew L.
White, Henry G. R.
Woolhiser, H. L.
- Winthrop Harbor**
Iverson, Dan J.
- Woodstock**
Hamilton, Allen K.
- Zion**
Barclay, Wm. O.
Mattausch, Frank A.
Medbery, Edward W.
- INDIANA**
- Chesterton**
Hempelmann, W. L.
Lesch, Lyndon
Miller, Herbert R.
- Crown Point**
Atkins, Dale B.
- East Chicago**
Ferguson, Lester M.
Helper, Kenenth M.
Lynn, C. V.
Perry, Wm. A.
Sale, Frank A.
Young, John L.
- Gary**
Bigelow, Lawrence N.
DeSharton, James N.
Eddy, Robert C.
Graves, Charles T.
Hesky, Edward A.
Highly, Frank M.
Leeper, Marvin T.
Maloney, John M.
Mathews, William W.
Metzger, C. J.
Mueller, Gilbert H.
Prince, Harry C.
Ramusack, Joseph
Reynolds, William H.
Rossiter, Glenn A.
Ruchti, Graham
Snepp, Karl M.
Stierer, George W.
Strassen, R. B.
Van Aken, Cordon R.
Wilkinson, Walter
- Hammond**
Ahlborn, Nolan C.
Benz, Carl W.
Frederick, F. G.
Hess, F. A.
McMinds, Peter J.
Seeley, Ray
Seidl, Otto J.
- Highland**
Million, Rex K.
Stevens, Gilbert A.
- Hobart**
Barnes, Harold I.
Kaar, Howard W.
- Indianapolis**
Benson, Allen A.
- Mishawaka**
Kiessling, Jeorme J.
- Muncie**
Cutler, Byron H.
- Munster**
Zink, Gordon G.
- Terre Haute**
Hoberg, F. J.
- Valparaiso**
Hesse, Herman C.

West Lafayette

Cadou, Peter B.
Clynnnes, William D.
Lasko, Richard W.
Swanson, William M.
Weber, Thomas B.
Wyly, Lt.

IOWA

Ames
Gilkey, Prof. Herbert J.
Burlington
Shortess, E. S., Jr.
Cedar Rapids
Bochman, B. E.
Farrel, Fred
Centerville
Hall, Merton G.
Clinton
Oseth, H. T.
Des Moines
Dawson, Voyle R.
Kneer, Vernon R.
Iowa City
Phillips, R. J.
Mason City
Dike, C. T.

KANSAS

Topeka
Dansey, James W.

KENTUCKY

Paducah
Borgerding, Walter L.

LOUISIANA

Hammond
Johnson, Maro
Lake Charles
Parsons, Walter J.

MARYLAND

Baltimore
Mueller, Philip R.
Chevy Chase
Bird, Byron
College Park
Just, James W.

MASSACHUSETTS

Mattapoisett
Hiller, Joseph L.
Milton
Plummer, R. L., Jr.
Newton Highlands
Foster, Edmond R.

MICHIGAN

Battle Creek
Cheney, S. W.
Beulah
Hammer, Mahlon J.
Detroit
Hillis, George C.
Osborn, C. R.
Wallworth, Eugene R.
Fennville
Paine, Clifford E.
Grand Rapids
Murr, Milton
Jackson
Larsen, Paul E.
Marquette
Myers, Walter J.
Vicksburg
Ronningen, Helmer N.

MINNESOTA

Minneapolis
Basler, George R.
Carson, L. J.
Jusenius, Fred H.
Rodgers, John L., Jr.
Tobin, John E.
Richfield
Jordan, Donald T.
Thief River Falls
Schreiner, John E.

MISSOURI

Glendale
Steen, Harry L.
Kansas City
Ahlskog, Edwin
Jeffries, Wm. R.
Macon
Barber, J. D.
Rolla
Einerson, Reynir
St. Louis
Brussell, Hugues
Compton, Dr. Arthur H.
Knehans, Wm. H.
Parmely, J. C.
Penn, Harry J.
Schirmer, Chester W.
Wheeler, William C.

NEBRASKA

Norfolk
Colvin, A. A.
Omaha
Walling, R. A.

NEVADA

Reno
Boardman, Prof. H. P.

NEW HAMPSHIRE

Manchester
Floto, Julius
Plymouth
McKinzie, D. J.

NEW JERSEY

East Orange
Johnson, N. A.
Glen Ridge
Barrows, William C.
Highstown
Ritchie, James F.
Mountain Lakes
Muir, Herbert H.
Newark
Bettle, W. H.
Britzke, Leonard A.
New Brunswick
Fletcher, Quigley
Princeton
Sloan, W. G.
Westfield
Goldsby, Fred L.
Swenson, A. H.
Townsend, H. C.

NEW MEXICO

Albuquerque
Morse, Ted B.
Sarney, Richard A.
Sharring, Ferd A.
Raton
Lalla, George J.

NEW YORK

Auburndale, Long Island
Miller, Edward A.
Elmira
Riggen, Theodore K.
Hollis, Long Island
Knowlton, Elwin C.
New York
Beal, Henry C.
Bottrill, David Hugh
Busch, Joseph Sherman
Chubb, J. H.
Luca, A. T.
McCullough, W. T., Jr.
McDermott, Thomas A.
Merriman, Chester F.
Schad, James A.
Snowdon, Edward N.
Stair, H. B.
Trent, Elmer J.
Vinet, Eugene
Wampler, Charles E.
Wass, John, Jr.
Weber, Carl
Weeks, Gilbert E.

Rensselaer

Schilling, Henry

Schenectady

Bushman, A. K.

Staten Island

Wittlinger, Carl A.

Syracuse

Stanley, Eugene R.

Watertown

Dixon, Marvin H.
Sillcox, L. K.

NORTH CAROLINA

Chapel Hill
Bowman, George L.
Charlotte
Foster, Albert W.
Hendersonville
Houser, A. M.

OHIO

Cincinnati
Greenwalt, Ward L.
Cleveland
Cudy, R. R.
King, Alexander J.
Loweth, F. C.
Ross, Herman M.
Columbus
Fairhall, W. M.
Kendrick, John F.
Dayton
Rosing, Anton S.
East Cleveland
Maney, Francis J.
Lakewood
Eaton, George S.
Lucasville
Goodman, Hal W.
Reynoldsburg
Gurtler, William A.
Tolado
Shuman, E. C.
Zanesville
Rutherford, Marvin H.

OKLAHOMA

Stillwater
Huddle, Robert W.
Tulsa
Ball, John C.
Biddison, P. McDonald

OREGON

Beaverton
Casley, Lee T.
Eugene
Angermayer, Charles E.
Portland
Stoyanov, Alex

PENNSYLVANIA

Bethlehem
Hazard, W. A.
Chester
Leardi, Thomas J.
Doylestown
Wray, D. C.
East Pittsburgh
Gregory, Warren R.
Edinboro
Engh, Harry M.
Gwynedd Valley
Dangemond, Le Roy M. G.
Havertown
Berzeluis, Carl E.
Lancaster
Mayo, Robert S.
Philadelphia
Clark, A. B.
Coe, Russell H.
Conover, Albert W.
Frandsen, N. P.
Harding, John H.
Hellsen, Karl
Kellenberger, K. E.
Lucas, Fred H.
Marvin, Arthur S.
Meschter, Elwood, Jr.
Richter, Harry P.
Schlesinger, Max
Webb, C. Earl

Pottsville

Beisel, N. J.

Springfield

Johnson, Eldon A.

State College

Sheviak, Frank G.

Wayne

Ziesing, Henry H.

RHODE ISLAND

Providence
Graham, Donald M.

SOUTH DAKOTA

Huron
Harmer, L. S.

TENNESSEE

Chattanooga
Reichle, F. G.
Nashville
Dahlgren, William J.
Oak Ridge
Budnik, C. A.
Harmon, Lawrence H.

TEXAS

Dallas
Boot, George W.
Naudain, Willis A.
El Paso
Hugg, Harlan H.
Freeport
Wetherell, Dwight N.
Lubbock
Pringle, Chester L.
San Antonio
Elliott, Jefferson B.
Pomy, Herman J.
Weslaco
Smith, R. C.

UTAH

Ogden
Quinn, Horace A.
Salt Lake City
Blickensderfer, Joseph W.

VIRGINIA

Alexandria
Lair, Jack R.
Arlington
Floyd, William H. III
Sedgwick, Fredrick W.
Hampton
Scott, W. Kenneth
Quantico
McKee, Keith E.
Zelbor, Marvin H.

WASHINGTON

Ephrata
Kocais, Peter, Jr.
Merysville
Hovland, Carolot B.
Seattle
Heald, James H.
Tacoma
Broussard, Joseph

WEST VIRGINIA

Bluefield
Brown, S. K.
Point Pleasant
Skillman, John E.

WISCONSIN

Fox Lake
Steffa, Homer I.
Hales Corners
Nelson, M. O.
Hartford
Nevefing, Aloys, Sr.
Madison
Bjorksten, Johan
Hunt, Henry J.
Turneauer, Fred E.
Manitowoc
Weber, Emil A.
Milwaukee
Drought, Orville H.
Guillemin, Victor
Holmquist, Harold J.
Knuth, Edwin C.
McGlade, Leo
Oshkosh
Fowler, E. J.
Springbrook
Lyon, Earle D.
Waukesha
Latimer, George T.
Winnebago
Beneseck, Thomas

FOREIGN

Arabia
Oddo, Dominic V.
Canada
Brace, James H.
Carter, E. F.
Simons, Howard A.
Hawaii
Bennett, J. Gardner
Morgan, J. Grant
Philippines
Mahoney, Haryr P.
South America
Kesinger, John W.

PAST PRESIDENTS OF WSE

| Name | Length of Term |
|--------------------|--------------------|
| Roswell B. Mason | 6-14-69 to 6-13-70 |
| Charles Paine | 6-13-70 to 6-9-73 |
| E. S. Chesbrough | 6-9-73 to 6-19-77 |
| Wm. Scoy Smith | 6-19-77 to 8-3-80 |
| E. S. Chesbrough | 8-3-80 to 1-2-82 |
| Willard S. Pope | 1-2-82 to 1-8-83 |
| DeWitt C. Creiger | 1-8-83 to 1-6-85 |
| Benezette Williams | 1-6-85 to 1-5-86 |
| A. W. Wright | 1-5-86 to 1-4-87 |
| S. G. Artingstall | 1-4-87 to 1-3-88 |
| A. Gottlieb | 1-3-88 to 1-8-89 |
| E. L. Corthell | 1-8-89 to 1-8-90 |
| L. E. Cooley | 1-8-90 to 2-3-92 |
| Isham Randolph | 2-8-92 to 1-4-93 |
| Robert W. Hunt | 1-4-93 to 1-3-94 |
| Hiero B. Herr | 1-3-94 to 1-2-95 |
| Horace E. Horton | 1-2-95 to 1-2-96 |
| John F. Wallace | 1-2-96 to 1-5-97 |
| Thos. T. Johnston | 1-5-97 to 1-4-98 |
| Alfred Noble | 1-4-98 to 1-3-99 |
| Onward Bates | 1-3-99 to 1-2-00 |
| Ambrose V. Powell | 1-2-00 to 1-8-01 |
| Octave Chenute | 1-8-01 to 1-7-02 |
| William H. Finley | 1-7-02 to 1-6-03 |
| Ralph Modjeski | 1-6-03 to 1-5-04 |
| H. W. Parkhurst | 1-5-04 to 1-3-05 |
| Edward C. Carter | 1-3-05 to 1-2-06 |
| Bion J. Arnold | 1-2-06 to 1-8-07 |
| W. L. Abbott | 1-7-08 to 1-5-09 |
| C. F. Loweth | 1-7-08 to 1-5-09 |
| Andrews Allen | 1-5-09 to 1-12-10 |
| J. W. Alvord | 1-12-10 to 1-11-11 |
| O. P. Chamberlain | 1-11-11 to 1-10-12 |
| W. C. Armstrong | 1-10-12 to 1-8-13 |
| Albert Reichmann | 1-8-13 to 1-7-14 |
| E. H. Lee | 1-7-14 to 1-13-15 |

| | |
|---------------------|--------------------|
| Wm. B. Jackson | 1-13-15 to 1-12-16 |
| B. E. Grant | 1-12-16 to 1-10-17 |
| H. J. Burt | 1-10-17 to 1-9-18 |
| Chas. B. Burdick | 1-9-18 to 1-22-19 |
| A. S. Baldwin | 1-22-19 to 1-28-20 |
| F. K. Copeland | 1-28-20 to 6-1-21 |
| C. H. MacDowell | 6-1-21 to 6-7-22 |
| J. L. Hecht | 6-7-22 to 6-6-23 |
| C. A. Morse | 6-6-23 to 6-4-24 |
| E. T. Howson | 6-4-24 to 6-3-25 |
| Homer E. Niess | 6-3-25 to 6-2-26 |
| F. E. Morrow | 6-2-26 to 6-1-27 |
| Rufus W. Putnam | 6-1-27 to 6-5-28 |
| John A. Garcia | 6-5-28 to 6-5-29 |
| William S. Monroe | 6-5-29 to 6-1-30 |
| W. O. Kurtz | 6-1-31 to 6-1-31 |
| Frank D. Chase | 6-1-31 to 6-1-32 |
| D. J. Brumley | 6-1-32 to 6-1-33 |
| Harry B. Gear | 6-1-33 to 8-1-34 |
| Charles C. Whittier | 8-1-34 to 8-1-35 |
| Frank F. Fowle | 8-1-35 to 8-1-36 |
| J. R. Van Pelt | 8-1-36 to 8-1-37 |
| L. R. Howson | 8-1-37 to 8-1-38 |
| Paul A. Westburg | 8-1-38 to 8-1-39 |
| L. R. Mapes | 8-1-39 to 6-1-40 |
| E. Gordon Fox | 6-1-40 to 6-1-41 |
| F. H. Lane | 6-1-41 to 6-1-42 |
| Fred G. Gordon | 6-1-42 to 6-1-43 |
| C. Earl Webb | 6-1-43 to 6-1-44 |
| Philip R. Elfstrom | 6-1-44 to 6-1-45 |
| Henry T. Heald | 6-1-45 to 6-1-46 |
| Titus G. Le Clair | 6-1-46 to 6-1-47 |
| W. V. Kahler | 6-1-47 to 6-1-48 |
| Verne O. McClurg | 6-1-48 to 6-1-49 |
| Gustav Egloff | 6-1-49 to 6-1-50 |

Names of deceased Past Presidents are in light type.

DECEASED HONORARY MEMBERS

| Name | Date Elected |
|--------------------|--------------|
| L. P. Moorhouse | 12-7-87 |
| Octave Chanute | 1-5-09 |
| Grenville M. Dodge | 5-20-09 |
| D. J. Whittemore | 12-6-10 |
| Geo. W. Goethals | 1-22-15 |
| John E. Blunt | 1-10-17 |
| Alonzo W. Paige | 1-10-17 |
| Onward Bates | 3-22-22 |
| Robert W. Hunt | 3-22-22 |
| Samuel Insull | 6-2-26 |

| Name | Date Elected |
|---------------------|--------------|
| Ralph Modjeski | 6-2-26 |
| Bion J. Anold | 6-1-27 |
| Arthur N. Talbot | 6-1-27 |
| E. C. Carter | 6-5-29 |
| John W. Alvord | 4-28-31 |
| C. F. Loweth | 4-28-31 |
| John F. Stevens | 10-29-35 |
| Benjamin F. Affleck | 9-26-38 |
| George Terry Horton | 1-7-44 |
| Daniel Webster Mead | 1-7-44 |

DECEASED MEMBERS

The following deaths have been reported since the publication of the last Year Book supplement. This shows the date the member joined, his grade at the time of death and the date he died:
Jas. B. Girard ('01,LM), 4-14-49.
William J. Swiatowski ('44,M), 5-29-49.
F. L. Jeffries ('06,LM), 11-19-49.
Paul Lillard ('36,M), 12-30-49.
Donald F. Leal ('49,S), 1-5-50.
F. A. Niemann ('19,LM), 1-13-50.
Edgar T. Mulford ('28,M), 2-50.
F. T. Darrow ('37,M), 2-27-50.

W. Rufus Abbott ('23,M), 3-20-50.
W. P. Nelson ('20,M), 3-15-50.
G. F. Gebhardt ('07,LM), 3-22-50.
Paul G. Brown ('00,LM), 3-24-50.
P. J. Herold ('44,M), 4-19-50.
F. E. Morrow ('14,LM), 4-29-50.
L. E. Alsweide ('36,M), 5-10-50.
W. S. Ruggles, Jr. ('46,M), 6-22-50.
Otto Jelinek ('36,M), 8-19-50.
John Johnsen ('19,LM), 8-28-50.
Moses Alperin ('36,M), 9-30-50.

Officers and Trustees — Past and Present

| | President | 1st Vice-Pres. | 2nd Vice-Pres. | 3rd Vice-Pres. | Treas. | Trustee | Secy. |
|---------------------|-----------|----------------|----------------|----------------|---------|-----------|---------|
| Abbott, W. L. | 1907-08 | 1906-07 | 1904-05 | | | | |
| Allen, Andrews | 1909-10 | 1907-08 | 1906-07 | | 1902-06 | | |
| Allen, E. W. | | | | | | 1921-24 | |
| Alvord, J. W. | 1910-11 | 1908-09 | | | | 1902-05 | |
| Andrew, C. R. | | | | | | 1938-43 | |
| Appleton, Thos. | | | | | | | 1894-95 |
| Armstrong, W. C. | 1912-13 | 1911-12 | | | | 1907-10 | |
| Arn, W. G. | | | | | | 1934-36 | |
| Arnold, B. J. | 1906-07 | | | | | 1900-03 | |
| Artingstall, S. G. | 1887-88 | | | | | 1886-88 | |
| Bainbridge, F. H. | | | | | | 1906 | |
| Baker, H. S. | | | | | | 1914-17 | |
| Baker, Ira O. | | | 1887-88 | 1911-12 | | | |
| | | | 1892-93 | | | | |
| Baldwin, A. S. | 1919-20 | | | 1918-19 | | | |
| Barnes, D. L. | | | | | 1894-96 | | |
| Bates, Onward | 1899-00 | | | | | | |
| Bates, W. S. | | | | | 1888-89 | | |
| Becker, Donald N. | | 1950- | | | 1948-50 | 1944-46 | |
| Bement, A. | | 1912-14 | 1910-11 | | | | |
| Bennett, J. Gardner | | 1939-40 | 1938-39 | 1937-38 | | | |
| Bernhard, Leroy F. | | | | | | 1949- | |
| Blake, Edw. J. | | 1900-01 | | | | | |
| Booth, K. F. | | | 1882-83 | | | | |
| Breckenridge, L. P. | | | 1902-03 | 1905-06 | | | |
| Brill, G. M. | | | | | | 1909-12 | |
| Brumley, D. J. | 1932-33 | 1931-32 | 1928-29 | 1927-28 | | | |
| | | 1929-30 | | | | | |
| Brunner, John | | | | | | 1906-09 | |
| Burdick, C. B. | 1918-19 | | 1915-16 | | | | |
| Burt, H. J. | 1917-18 | | 1916-17 | | | | |
| Bushman, A. K. | | | 1944-45 | | | 1941-44 | |
| Carpenter, Horace | | | 1923-24 | | | | |
| Carter, Edw. C. | 1905-06 | 1892-93 | | | | | |
| Carlidge, C. H. | | 1916 | | | | | |
| Casad, M. W. | | | | | 1945- | | |
| Casley, F. F. | | | | | | 1924-27 | |
| Chamberlain, O. P. | 1911-12 | 1910-11 | 1909-10 | | | 1915-18 | |
| Chanute, Octave | 1901-02 | 1885-86 | 1888-89 | | | 1891-94 | |
| Chase, Frank D. | 1931-32 | 1930-31 | | 1929-30 | | 1925-28 | |
| Chesbrough, E. S. | 1873-77 | | | | | | |
| | 1880-82 | | | | | | |
| Clark, H. H. | | | | 1923-24 | | | |
| Clarke, W. H. | | | | | | 1869-74* | |
| Cleveland, H. W. S. | | | | | | 1874-75* | |
| Condron, T. L. | | | 1899-00 | | | | |
| Cooley, L. E. | 1890-92 | 1887-88 | | | | | 1888-89 |
| Copeland, F. K. | 1920-21 | 1919-20 | | | | | |
| Corthell, E. L. | 1889-90 | | | | | | |
| Cosley, H. H. | | | | | | 1933-35 | |
| Cregier, D. C. | 1883-85 | 1882-83 | 1880-82 | | | | |
| Cunningham, J. D. | | | | | | 1935-37 | |
| Curtis, W. W. | | | | | | 1910-13 | |
| Dailey, John A. | | | | | | 1922-25 | |
| Dalstrom, O. F. | | | | | | 1917-20 | |
| Dart, C. R. | | | 1911-12 | | 1913-20 | | |
| Davidson, F. E. | | | | | | 1913-16 | |
| DeBerard, W. W. | | | | 1917-18 | | 1918-20 | |
| De Leuw, C. E. | | | | | | 1947-50 | |
| Draper, H. C. | | | 1894-95 | | | | |
| Durham, C. W. | | | | | | 1874-75* | |
| Egloff, Gustav | 1949-50 | 1948-49 | 1947-48 | | | { 1938-41 | |
| | | | | | | { 1944- | |
| Elfstrom, P. R. | 1944-45 | 1943-44 | 1942-43 | | 1938-42 | | |
| Eshbach, Ovid W. | | | 1950- | | | | |
| Felt, C. F. W. | | 1920-21 | | | | | |
| Field, H. H. | | | | | | 1931-33 | |
| Finley, Wm. H. | 1902-03 | 1901-02 | 1900-01 | | | | |
| FitzSimmons, Chas. | | | | | 1880-87 | 1889-92 | |
| Fowle, F. F. | 1935-36 | 1922-23 | 1921-22 | | 1920-21 | | |
| Fowler, M. M. | | | | 1926-27 | | 1923-26 | |
| Fox, E. Gordon | 1940-41 | | 1939-40 | 1938-39 | | | |
| French, W. M. R. | | | | | | 1875-78* | |

Names of deceased Members are printed in light face type.

| | President | 1st Vice-Pres. | 2nd Vice-Pres. | 3rd Vice-Pres. | Treas. | Trustee | Secy. |
|-----------------------------|-----------|----------------|----------------|----------------|---------|----------|---------|
| Garcia, John A. | 1928-29 | 1927-28 | 1926-27 | 1925-26 | ..... | ..... | ..... |
| Gayton, L. D. .... | ..... | ..... | ..... | ..... | ..... | 1932-34 | ..... |
| Gear, Harry B. | 1933-34 | 1932-33 | 1930-32 | ..... | ..... | ..... | ..... |
| Gebhardt, G. F. .... | ..... | ..... | ..... | 1914-15 | ..... | ..... | ..... |
| Gerber, Emil .... | ..... | ..... | ..... | ..... | 1896-98 | ..... | ..... |
| Giaver, J. G. .... | ..... | ..... | ..... | ..... | ..... | 1912-15 | ..... |
| Goldmark, Henry .... | ..... | ..... | ..... | ..... | ..... | ..... | 1896 |
| Gordon, F. G. | 1942-43 | 1941-42 | 1940-41 | ..... | 1937-38 | 1934-37 | ..... |
| Goss, W. F. M. .... | ..... | ..... | ..... | 1909-10 | ..... | ..... | ..... |
| Gottlieb, A. | 1888-89 | ..... | ..... | ..... | ..... | 1886-89 | ..... |
| Grant, B. E. | 1916-17 | 1914-15 | 1901-02 | ..... | ..... | 1903-06 | ..... |
| ..... | ..... | 1913-14 | ..... | ..... | ..... | ..... | ..... |
| Greeley, S. S. .... | ..... | 1883-84 | ..... | ..... | ..... | 1875-80* | ..... |
| ..... | ..... | ..... | ..... | ..... | ..... | 1880-83 | ..... |
| Green, O. B. .... | ..... | ..... | ..... | ..... | ..... | 1888-91 | ..... |
| Grinter, L. E. .... | ..... | ..... | ..... | ..... | ..... | 1950- | ..... |
| Hall, Ferd .... | ..... | ..... | ..... | ..... | ..... | 1897-00 | ..... |
| Hand, Geo. W. .... | ..... | ..... | ..... | ..... | 1923-28 | 1928-30 | ..... |
| Hansen, Paul .... | ..... | ..... | ..... | ..... | ..... | 1943-44 | ..... |
| Harger, Kendrick .... | ..... | ..... | ..... | ..... | ..... | 1940-43 | ..... |
| Harper, R. B. .... | ..... | ..... | 1945 | ..... | ..... | 1942-45 | ..... |
| Harrington, J. Earl. .... | ..... | ..... | ..... | ..... | ..... | ..... | 1949 |
| Hart, G. A. .... | ..... | ..... | ..... | ..... | ..... | 1920-21 | ..... |
| Hatch, J. N. .... | ..... | 1918-19 | 1917-18 | ..... | ..... | ..... | ..... |
| Hatt, W. K. .... | ..... | ..... | ..... | 1910-11 | ..... | ..... | ..... |
| Haupt, C. W. .... | ..... | ..... | ..... | ..... | 1934-36 | ..... | ..... |
| Hayford, J. F. .... | ..... | ..... | ..... | 1913-14 | ..... | ..... | ..... |
| Heald, H. T. | 1945-46 | 1944-45 | 1943-44 | ..... | ..... | 1939-42 | ..... |
| Hecht, J. L. | 1922-23 | 1921-22 | 1920-21 | 1919-20 | ..... | ..... | ..... |
| Herr, Hiero | 1894-95 | ..... | 1893-94 | ..... | ..... | ..... | ..... |
| Hjortisberg, Max .... | ..... | ..... | ..... | ..... | ..... | 1869-74* | ..... |
| Horton, Horace E. | 1895-96 | ..... | ..... | ..... | ..... | 1896-99 | ..... |
| Hotchkiss, C. W. .... | ..... | 1904-05 | ..... | ..... | ..... | 1901-04 | ..... |
| Howson, E. T. | 1924-25 | 1923-24 | ..... | 1922-23 | ..... | 1919-22 | ..... |
| Howson, A. W. .... | ..... | ..... | ..... | ..... | 1950- | ..... | ..... |
| Howson, L. R. | 1937-38 | 1936-37 | 1935-36 | 1933-35 | ..... | ..... | ..... |
| Hudson, C. H. .... | ..... | 1886-87 | ..... | ..... | ..... | ..... | ..... |
| Hunt, Robert W. | 1893-94 | ..... | ..... | ..... | ..... | 1894-97 | ..... |
| Huntington, W. C. .... | ..... | ..... | ..... | ..... | ..... | 1936-39 | ..... |
| Imhoff, Elden A. .... | ..... | ..... | ..... | ..... | ..... | 1947-50 | ..... |
| Jackson, Dugald C. .... | ..... | ..... | ..... | 1906-07 | ..... | ..... | ..... |
| Jackson, Wm. B. | 1915-16 | ..... | ..... | ..... | ..... | ..... | ..... |
| Johnson, Thos. T. | 1897-98 | 1896-97 | 1895-96 | ..... | ..... | ..... | ..... |
| Junkersfeld, Peter .... | ..... | 1909-10 | 1908-09 | ..... | ..... | ..... | ..... |
| Kahler, W. V. | 1947-48 | 1946-47 | 1945-46 | ..... | ..... | 1944-45 | ..... |
| Keith, Leigh S. .... | ..... | 1934-35 | 1933-34 | 1932-33 | 1928-32 | ..... | 1935-47 |
| Kinney, Wm. M. .... | ..... | ..... | 1918-19 | ..... | ..... | ..... | ..... |
| Knowles, C. R. .... | ..... | ..... | 1934-35 | ..... | ..... | ..... | ..... |
| Kurtz, W. O. | 1930-31 | ..... | 1929-30 | 1928-29 | ..... | ..... | ..... |
| Lane, F. H. | 1941-42 | 1940-41 | ..... | 1939-40 | ..... | 1936-39 | ..... |
| Lane, Moses .... | ..... | 1880-82 | ..... | ..... | ..... | ..... | ..... |
| Layfield, E. N. .... | ..... | ..... | 1907-08 | ..... | ..... | ..... | 1915-17 |
| LeClair, Titus G. | 1946-47 | 1945-46 | ..... | ..... | 1942-45 | 1937-40 | ..... |
| Lee, E. H. | 1914-15 | ..... | ..... | ..... | ..... | ..... | ..... |
| Lenth, Geo. C. D. .... | ..... | ..... | ..... | ..... | ..... | 1916-19 | ..... |
| Libberton, J. H. .... | ..... | ..... | ..... | ..... | ..... | 1920-21 | ..... |
| Liljencrantz, G. A. M. .... | ..... | 1905-06 | ..... | ..... | ..... | 1895-98 | ..... |
| Litten, Nelson L. .... | ..... | ..... | ..... | ..... | ..... | ..... | 1896-01 |
| Lowell, J. W. .... | ..... | ..... | ..... | ..... | ..... | 1921-22 | ..... |
| Loweth, C. F. | 1908-09 | ..... | 1905-06 | ..... | ..... | ..... | ..... |
| McClure, R. J. .... | ..... | ..... | ..... | ..... | ..... | 1880-87 | ..... |
| McClurg, V. O. | 1948-49 | 1947-48 | 1946-47 | ..... | ..... | 1942-45 | ..... |
| McCullough, Ernest .... | ..... | 1915-16 | 1914-15 | ..... | ..... | 1911-14 | ..... |
| ..... | ..... | ..... | ..... | ..... | ..... | 1916 | ..... |
| McElroy, Samuel .... | ..... | ..... | 1885-86 | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 1889-90 | ..... | ..... | ..... | ..... |
| McHarg, W. S. .... | ..... | ..... | ..... | ..... | ..... | 1882-85 | ..... |
| MacDowell, C. H. | 1921-22 | ..... | ..... | ..... | ..... | ..... | ..... |
| Macomb, J. deN. .... | ..... | ..... | ..... | ..... | ..... | 1946-49 | ..... |
| MacRitchie, Chas. .... | ..... | 1889-90 | ..... | ..... | ..... | ..... | ..... |
| Mapes, L. R. | 1939-40 | 1938-39 | 1937-38 | 1936-37 | ..... | 1933-36 | ..... |
| Mason, Roswell B. | 1869-70 | ..... | ..... | ..... | ..... | ..... | ..... |
| Massey, Geo. B. .... | ..... | ..... | ..... | ..... | ..... | 1939-42 | ..... |
| Mead, Daniel W. .... | ..... | 1894-95 | ..... | 1908-09 | ..... | ..... | ..... |
| Melcher, C. W. .... | ..... | ..... | ..... | ..... | 1898-00 | ..... | ..... |
| Miller, K. B. .... | ..... | 1919 | ..... | ..... | ..... | ..... | ..... |

Names of deceased Members are printed in light face type.

NOTE: *Executive Committee preceded Trustees.

| | President | 1st Vice-Pres. | 2nd Vice-Pres. | 3rd Vice-Pres. | Treas. | Trustee | Secy. |
|------------------------|-----------|----------------|----------------|----------------|---------|----------|---------|
| Modjeski, Ralph | 1903-04 | 1902-03 | | | 1900-02 | | |
| Monroe, Wm. S. | 1929-30 | 1928-29 | 1927-28 | | | | |
| Morehouse, L. P. | | 1895-96 | | | 1869-80 | | 1869-88 |
| Morison, Geo. S. | | | | | | 1893-96 | |
| Morrow, F. E. | 1926-27 | 1925-26 | 1924-25 | | | | |
| Morse, C. A. | 1923-24 | | 1922-23 | | | | |
| Nagler, K. B. | | | | | | 1935-38 | |
| Nethercut, Edgar S. | | | | | | | 1917-35 |
| Newell, F. H. | | | | 1916-17 | | | |
| Nichols, Geo. P. | | | | | | 1898-01 | |
| Niesz, Homer E. | 1925-26 | 1924-25 | | | 1921-23 | | |
| Noble, Alfred | 1898-99 | 1897-98 | 1896-97 | | | | |
| Northway, W. R. | | | 1890-91 | | | | |
| Nourse, Edwin G. | | | | | 1893-94 | | |
| Nutt, H. C. | | | | | | 1880-82 | |
| Osborn, C. M. | | | | | 1936-37 | | |
| Paine, Charles | 1870-73 | | | | | | |
| Parkhurst, H. W. | 1904-05 | 1903-04 | | | 1889-90 | | |
| Penn, Henry | | | | | | 1946- | |
| Pence, W. D. | | | | 1904-05 | | | |
| Pope, Willard S. | 1882-83 | | | | | | |
| Powell, Ambrose V. | 1900-01 | | 1898-99 | | 1887-88 | | |
| Putnam, Rufus W. | 1927-28 | 1926-27 | 1925-26 | 1924-25 | | | |
| Randall, Frank A. | | | | | | 1935-38 | |
| Randolph, Isham | 1892-93 | 1884-85 | 1883-84 | | | | |
| Reichmann, Albert | 1913-14 | | | | 1906-13 | | |
| Reynolds, James J. | | 1898-99 | 1897-98 | | | 1901 | |
| Rich, E. P. | | | | | | 1926-29 | |
| | | | | | | 1934-35 | |
| | | | | | | 1908-11 | |
| Ritter, L. E. | | | | | | | 1895-96 |
| Roney, Chas. J. | | | | | | | |
| Roper, D. W. | | 1916-18 | 1916 | | | | |
| Rust, H. A. | | 1893-94 | | | | 1887-90 | |
| Sedwick, H. P. | 1950- | 1949-50 | 1948-49 | | | 1945-47 | |
| Seely, G. T. | | | 1912-13 | | | | |
| Seymour, W. O. | | | 1891-92 | | | | |
| Shailer, Robert A. | | 1890-91 | | | | | |
| Shankland, F. C. | | | | 1912-13 | | | |
| Shapiro, B. B. | | | | 1921-22 | | | |
| Skog, Ludwig | | | | | | 1949- | |
| Smith, Homer K. | | | | | | 1945- | |
| Smith, W. Sooy | 1877-80 | | | | | 1883-86 | |
| Snow, T. W. | | | | | | 1904-07 | |
| Steger, Donald V. | | | | | | | 1947- |
| Strasser, R. J. | | | | | | 1937-40 | |
| Strobel, C. L. | | | | | | 1892-95 | |
| Sullivan, John F., Jr. | | | | | 1950- | | |
| Sykes, Wilfred | | | | | | 1948- | |
| Talbot, A. N. | | | | 1907-08 | | | |
| Townsend, H. C. | | | | | | 1943-46 | |
| Turneure, F. E. | | | 1903-04 | | | | |
| Turner, Ralph E. | | | | | | 1945- | |
| VanPelt, J. R. | 1936-37 | 1935-36 | | | | 1934-35 | |
| Vore, M. P., Jr. | | | | | 1948- | | |
| Wallace, John F. | 1896-97 | 1891-92 | | | | | |
| Warder, J. H. | | | | | | | 1901-15 |
| Webb, C. Earl | 1943-44 | 1942-43 | 1941-42 | | | | |
| Westburg, Paul A. | 1938-39 | 1937-38 | 1936-37 | 1935-36 | 1932-34 | 1940-41 | |
| Weston, C. V. | | | | | | 1929-32 | |
| Weston, John W. | | 1888-89 | | | 1890-93 | | 1889-94 |
| White, Linn | | | | 1920-21 | | | |
| Whiting, F. T. | | | | | | 1948- | |
| Whitney, Nelson O. | | 1899-00 | | | | | |
| Whitridge, John C. | | | | | 1902 | | |
| Whittemore, D. J. | | | 1886-87 | | | | |
| Whittier, C. C. | 1934-35 | 1933-34 | 1932-33 | 1930-32 | | 1927-30 | |
| Williams Benozette | 1885-86 | | | | | 1878-80* | |
| Wisner, G. M. | | | | | | 1905-08 | |
| Witt, J. C. | | | 1949-50 | | | | |
| Woodworth, P. B. | | | | 1915-16 | | | |
| Wright, Augustine W. | 1886-87 | | 1884-85 | | | 1885-86 | |
| Young, Hugh E. | | | | | | 1941-44 | |
| Ziesing, August | | | | | | 1899-02 | |

Names of deceased Members are printed in light face type.

*Executive Committee preceded Trustees.

Yearbook Advertisers

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|Inside Back Cover | | Fitz Simons and Connell..... | 25 | Line Materials Co..... | 72 |
| American Bridge Co..... | 54 | Gallagher and Speck, Inc..... | 35 | Link Belt Co..... | 100 |
| J. C. Anderston, Inc..... | 17 | General Elec. Co..... | 89 | W. H. Lyman Construc. Co..... | 38 |
| Babcock & Wilcox..... | 14 | Gibson Elec. Co..... | 47 | Fred Marshall..... | 39 |
| Warren Barr..... | 65 | Great Lakes Dredge and Dock Co..... | 101 | Material Service Co..... | 21 |
| Walter Bates..... | 80 | John Griffiths & Son Construc. Co..... | 36 | Merrill & Co..... | 39 |
| Bell Lumber & Pole..... | 91 | H-H Elec. Co..... | 30 | Mid City Architectural Iron Co..... | 99 |
| Alfred Benesch..... | 18 | George D. Hardin..... | 28 | Mississippi Valley Structural Steel | |
| S. E. Berkenblit..... | 17 | Harza Engineering Co..... | 28 | Co.....Back Cover | |
| Binyon's Restaurant..... | 19 | Hazelet and Erdal..... | 30 | John Mohr Co..... | 44 |
| H. R. Bradley & Co..... | 18 | R. B. Hayward Co..... | 29 | Moloney Elec. Co..... | 95 |
| Buck, Elec. Contrac..... | 18 | Hawkins Elec. Co..... | 106 | Morrison Construc. Co..... | 45 |
| Bulley & Andrews..... | 20 | Hecker and Co., Inc..... | 34 | Muncie Construc. Co..... | 22 |
| Burgess-Manning | 105 | Herlihy Mid-Continent..... | 92 | L. E. Myers..... | 46 |
| John Burns..... | 58 | I-T-E Circuit Breaker Co..... | 77 | Naess & Murphy Co..... | 42 |
| Cast Iron Pipe..... | 85 | Illinois Brick Co..... | 50 | Narowetz Heating & Ventilating | |
| Chicago Fence & Equipment..... | 22 | Inland Steel Co..... | 81 | Co..... | 57 |
| James B. Clow & Sons..... | 82 | Clarence A. Jenks and Co..... | 31 | Nash Brothers Construc. Co..... | 43 |
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| Cornell Dubilier Elec. Co..... | 40 | Joseph Lumber Co..... | 41 | National Power Co..... | 97 |
| Delta Star Elec. Co..... | 115 | S. I. Kaufman Co..... | 80 | George O. Neumann..... | 59 |
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| Dovell & Co..... | 23 | Kerite Co..... | 65 | Okonite Co..... | 37 and 105 |
| Edward Valves Co..... | 68 | Knickerbocker Roofing & Pav. Co..... | 55 | Pacific Flush Tank Co..... | 66 |
| Emerson Comstock Co..... | 88 | Kuhlman Elec. Co..... | 62 | | |

(Continued on Page 116)

(Continued on Page 116)

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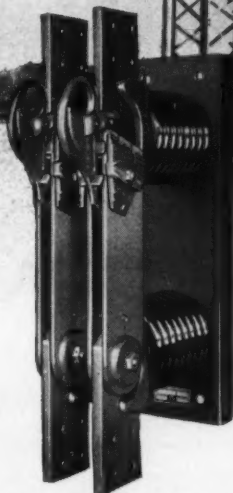
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DURHAM, N. C. BOSTON, MASS. TORONTO, ONT. NEW YORK, N. Y.

DEPENDABILITY - EFFICIENCY - ECONOMY

Are Yours when you specify

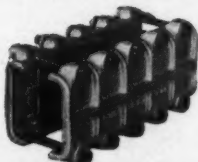
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23 Kv. 600 Ampere
"MK-40" single pole unit

Type "5G", 92.5 Kv. high
speed grounding switch

23 Kv. 3000 Ampere, Type
"J-14P" indoor disconnect



Type "CS" straight
connector for square
tubing

In the final evaluation, the soundness of your power switching purchases will be measured not by the initial investment but rather by service rendered over the years.

Through more than four decades of experience in designing and manufacturing, plus constant research, Delta-Star has developed a complete line of power switching equipment with a long record of efficiency and economy.

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34.5 Kv. single-conductor
Type "5B0" outdoor terminator

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NEW YORK OFFICE — 140 Cedar St., New York 6, N. Y.

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Minneapolis, Minn.
Norfolk, Neb.
Norfolk, Va.
Philadelphia, Pa.

Pittsburgh, Pa.
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Washington, D. C.
Honolulu, Hawaii

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Canadian Line Materials Limited

Toronto 13, Canada

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Give them an application.**

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| John A. Roebling Co..... | 74 and 106 | Westinghouse Elec. Co..... | 69 |
| Royal Elec. Mfrg. Co..... | 23 | E. H. Wachs Co..... | 98 |

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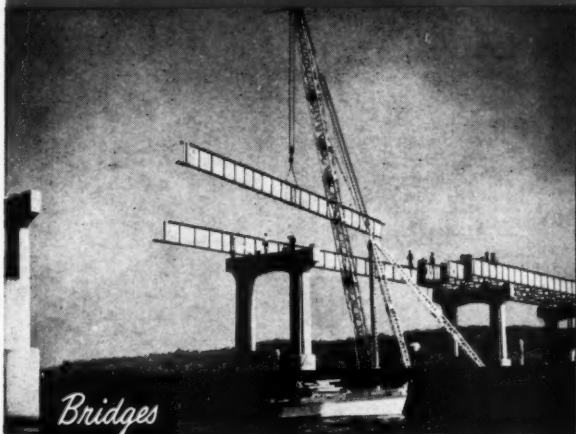
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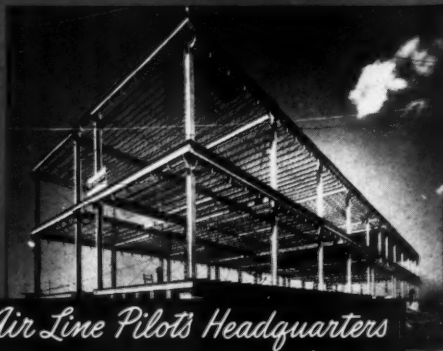
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Industrial Buildings

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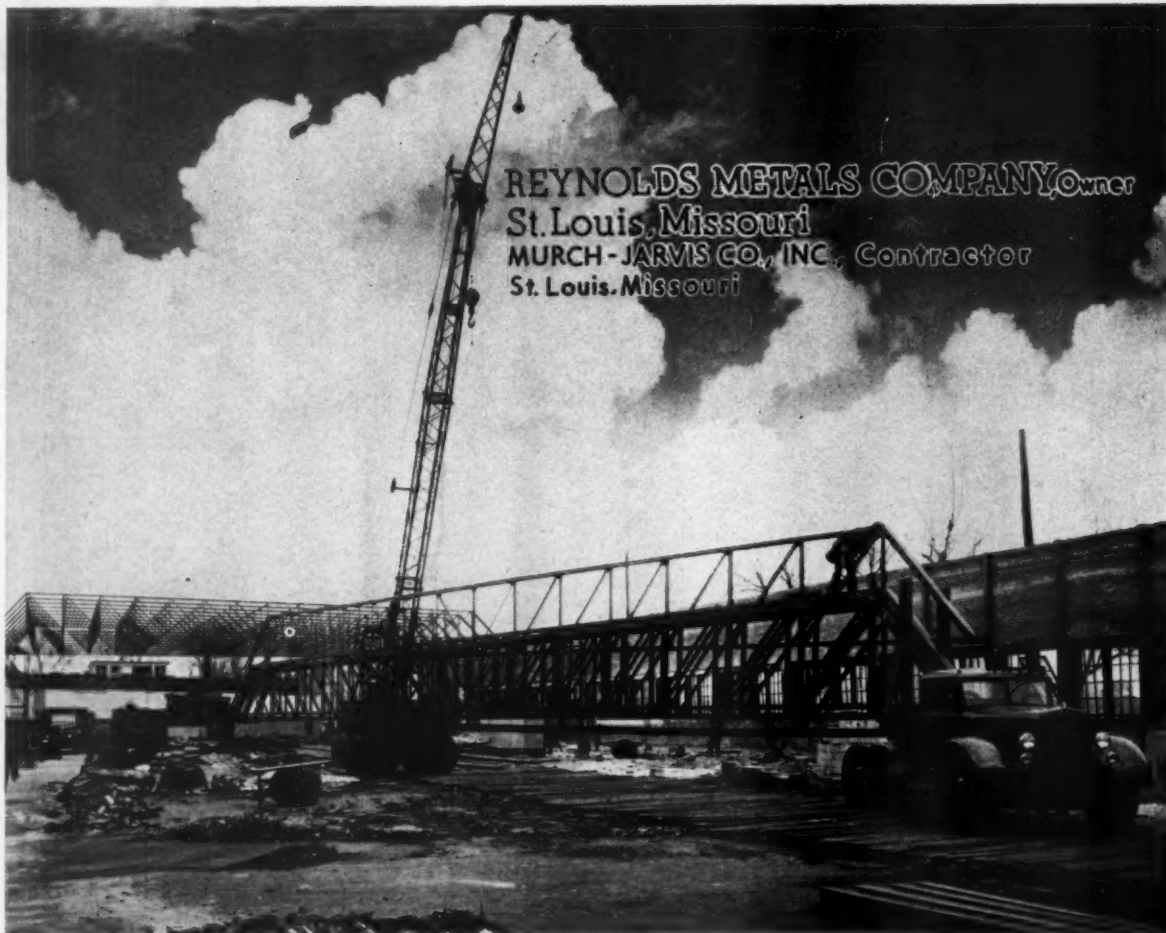
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Engineers • Fabricators • Erectors
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